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AN EXPLANATION TO OUR READERS

After something over three years of publication, ECONOMIC DEVELOPMENT AND CULTURAL CHANGE is established as the scholarly journal devoted solely to the economic and social problems of developing economies. We receive papers from all quarters; our subscribers are scattered about the world. There is no question that insofar as reputation is concerned, we are an established journal.

However, we have not yet been able to operate without some subsidy. We are making a three-pronged attack on this problem. First, the new cover format enables us to take advertising on our back and inside covers, and it clears some inside space for the same purposes. We hope, in the not-too-distant future, to attract up to five pages of paying advertisement. Secondly, we have had to take a step which we do not like--our subscription rates had to be increased: to $3.00 per volume for individuals, and to $5.00 per volume for libraries and institutions.

Finally, we are planning a determined effort to increase our circulation. Part of this effort involves the assistance of our readers. We ask you each to undertake to interest one or more of your colleagues in ECONOMIC DEVELOPMENT AND CULTURAL CHANGE. We can make no bargain offers--our rates, even with the increase, are extremely low--but anyone who is interested in underdeveloped areas should be interested in ECONOMIC DEVELOPMENT AND CULTURAL CHANGE.

Will you help us? We have no doubt that a combination of increased circulation, plus increased per-unit revenue, plus advertising revenue, will pull us into the black shortly, and we should then be able to promise you more of the sort of fare you have been getting from us: interesting articles with occasional special supplements--and perhaps further format improvements.

FROM THE EDITORS

SOCIAL STRUCTURE AND FERTILITY: AN ANALYTIC FRAMEWORK

A striking feature of underdeveloped areas is that virtually all of them exhibit a much higher fertility than do urban-industrial societies. This well-documented but insufficiently analyzed fact is known to be connected with profound differences in social organization as between the two types of society, and is therefore significant for the comparative sociology of reproduction. The clarity and importance of the contrast, however, should not be allowed to obscure the equally important fact that underdeveloped areas themselves differ markedly in social organization, and that these differences appear to bring about variations in fertility. Though the demographic statistics of backward regions have generally been so poor as to place in doubt the validity of reported differences, there are cases in which the evidence is reliable (e. g., as between Puerto Rico and Jamaica, or Arab Palestine and Ceylon). Of equal interest are the cases in which societies with differing social organization have the same level of fertility, for they may reach this common result by quite different institutional mechanisms. All told, ample opportunity exists for the comparative analysis of social structure as it affects fertility. In view of the bearing of future population trends on economic development, the pursuit of such analysis has a practical as well as a theoretical significance.

The present paper represents an attempt to set forth and utilize an analytical framework for the comparative sociology of fertility. It first presents a classification of the intermediate variables through which any social factors influencing the level of fertility must operate. It next tries to show, in broad outline, how some types and elements of social organization, acting through these variables, appear to enhance or depress societal fertility. Our hope is that as more sociological and demographic information becomes available, the theories advanced can be refined further and tested empirically.

The Intermediate Variables

The process of reproduction involves three necessary steps sufficiently obvious to be generally recognized in human culture: (1) intercourse, (2) conception, and (3) gestation and parturition.[1] In analyzing cultural influences on fertility, one may well start with the factors directly connected with these three steps. Such factors would be those through which, and only through which, cultural conditions <u>can</u> affect fertility. For this reason, by way of convenience, they can be called the "intermediate variables" and can be presented schematically as follows:

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(1) Although the physiologist sees more steps in the process, these can all be subsumed under the three headings given here. We are concerned only with the steps in reproduction as they may be socially recognized and utilized.

I. Factors Affecting Exposure to Intercourse ("Intercourse Variables").

A. Those governing the formation and dissolution of unions in the reproductive period.[2]

1. Age of entry into sexual unions.

2. Permanent celibacy: proportion of women never entering sexual unions.

3. Amount of reproductive period spent after or between unions.

a. When unions are broken by divorce, separation, or desertion.

b. When unions are broken by death of husband.

B. Those governing the exposure to intercourse within unions.

4. Voluntary abstinence.

5. Involuntary abstinence (from impotence, illness, unavoidable but temporary separations).

6. Coital frequency (excluding periods of abstinence).

II. Factors Affecting Exposure to Conception ("Conception Variables").

7. Fecundity or infecundity, as affected by involuntary causes.

8. Use or non-use of contraception.

a. By mechanical and chemical means.

b. By other means.[3]

9. Fecundity or infecundity, as affected by voluntary causes (sterilization, subincision, medical treatment, etc.).

III. Factors Affecting Gestation and Successful Parturition ("Gestation Variables").

10. Foetal mortality from involuntary causes.

11. Foetal mortality from voluntary causes.

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(2) Since sexual intercourse is not confined to wedlock, the term "sexual union" seems preferable to "marriage". A union is here defined as any heterosexual relationship in which either actual intercourse occurs or orgasm is produced for at least the male partner. Every society has a type of union (marriage) in which reproduction is expected, approved, and even enjoined. At the same time every society runs the risk of unions in which reproduction is condemned, either because they lack the legal form of marriage or because they violate one or more institutional taboos (adultery, incest, caste, or class endogamy, etc.--see K. Davis, "The Forms of Illegitimacy", Social Forces, Vol. 18, October 1939, pp. 77-89). Between the fully approved and the strongly proscribed unions, there may be other types which have a lesser grade than marriage but in which reproduction normally occurs. Such unions may be frequent, in some cases representing the majority of reproductive unions. Any satisfactory sociological analysis of reproduction must keep straight the different types of unions.

(3) Means of contraception other than mechanical and chemical include the "rhythm" method (which can also be classed as voluntary abstinence), withdrawal, simulated intercourse without penetration, various "perversions", etc.

It is clear that any cultural factor that affects fertility must do so in some way classifiable under one or another of our eleven intermediate variables.[4] Hence the latter provide a framework in terms of which the relevance of cultural factors to fertility can be judged. In fact, attempts to explain causal relationships between institutions and fertility without such a framework have led to inconclusive and confused writing on the subject.[5] The cultural factors, or "conditioning variables", are presumably many, and no effort is made here to classify them; but the "intermediate variables" offer a means of approach to selecting and analyzing these factors.

It is also clear that each of the eleven variables may have a negative (minus) or a positive (plus) effect on fertility. If by examining all societies we could find the range of influence of a given variable, any effect more negative than the midpoint of this range would be on the minus side, and any influence more positive would be on the plus side. If, for example, a society uses contraception successfully, it has a minus value with respect to variable number 8; if it uses no contraception, it has a plus value on this variable. The value of each variable refers to how it affects fertility in each case; so a positive use of something (e. g., contraception, abortion, abstinence) may mean that it has a "minus" fertility-value.

One cannot say, as is frequently implied in the literature, that some of these variables are affecting fertility in one society but not in another. All of the variables are present in every society. This is because, as mentioned before, each one is a variable--it can operate either to reduce or to enhance fertility. If abortion is not practiced, the fertility-value of variable number 11 is "plus". In other words, the absence of a specific practice does not imply "no influence" on fertility, because this very absence is a form of influence. It follows that the position of any society, if stated at all, must be stated on all eleven variables.

Societies differing in their social organization do not necessarily have different fertility-values with respect to all the variables. On some of the variables they may exhibit quite similar values. A nomadic tribe may have the same age at marriage as a settled agrarian village; a primitive group may practice the same rate of abortion as an industrial society. Two contrasting societies are not likely, however, to manifest similar values for all the variables; they are not likely to do this even when their general fertility level is practically the same. The actual birth rate depends on the net balance of the values of all the variables. Though societies which generate a high fertility tend to be predominantly on the plus side, no society has the highest plus value on all eleven variables; and societies with low fertility turn out to be amazingly positive on a number of them.

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(4) The reader will note that our list of variables does not include infanticide or child care. The reason for this omission is that our analysis is focused on factors affecting fertility strictly defined. Infanticide does, of course, affect family size and natural increase and may serve as an alternative to factors affecting fertility. It is therefore discussed briefly at a later point.

(5) For instance, Frank Lorimer, Culture and Human Fertility, Paris, 1954, by failing to make clear the ways in which fertility can be affected, gives in some ways a confused picture of how it is affected. The reader may wish to compare our framework with a half-page outline of direct and indirect factors affecting fertility given by Raymond Pearl at the end of an article on "Biological Factors in Fertility", Annals of the American Academy of Political and Social Science, Vol. 188, November 1936, p. 24.

It should, of course, be mentioned that cultural influences affecting our eleven variables do not necessarily represent rational attempts to govern fertility. Many fertility consequences stemming from socio-cultural conditions (especially in underdeveloped regions) are by-products, being unanticipated and unrealized by members of the society. Surely by now social scientists know that they cannot confine their attention only to rational actions or treat non-rational actions as somehow defying systematic analysis. The requirements of a given society can be met just as well, and just as ill, by an unintentional level of fertility as by an intentional one.

Institutional Patterns and the Intermediate Variables: A Preliminary Analysis

From the standpoint of comparative sociology, an important question is how the fertility-values of our intermediate variables distribute themselves in different kinds of societies. A preliminary generalization is that underdeveloped societies tend to have high fertility-values for numbers 1, 2, 8, and 9 on the list; they may have high values for 3a, 3b, and 10; and they often have low values for 4 and 11. As for the remaining variables--5, 6, and 7--it is hard to prove that there are any consistent differences between pre-industrial and industrial societies. If this generalization is roughly accurate, then it becomes meaningful to re-group the eleven variables as follows:

The Intermediate Variables According to Their Values in Pre-Industrial Societies

Usually High Values	Usually Low Values
1. Age of entry into unions.	4. Voluntary abstinence.
2. Permanent celibacy.	10. Foetal mortality--involuntary
8. Contraception.	
9. Sterilization, etc.	

High or Low Values	Indeterminate
3a. Time between unstable unions.	5. Involuntary abstinence.
3b. Post-widowhood celibacy.	6. Frequency of coitus.
11. Foetal mortality--voluntary.	7. Involuntary sterility.

In attempting to analyze in a preliminary way how different institutional patterns affect the variables, we shall find it convenient to follow the order just given.

Number 1. Age of Entry into Unions

In beginning with age of entry into unions, we are dealing with one of the variables governing exposure to intercourse. It should be noted that these particular variables, however favorable they may be to fertility in themselves, may be counteracted in practice by other factors governing conception and gestation. For example, even though sexual unions begin early, pregnancy or childbirth may be prevented. This is often the case when the sexual union is not a marriage. Many societies, even though they permit premarital intercourse, strongly forbid illegitimate pregnancy.[6] With respect to marital

(6) Among the 250 societies for which he had information, Murdock found that, apart from incest taboos, "premarital relations are fully permitted in 65 instances, and are conditionally approved in 43 and only mildly disapproved in 6, whereas they are forbidden in only 44. In other words,

unions, however, reproduction is specifically sanctioned, indeed expected. As already mentioned, there may be, in addition, non-marital unions in which reproduction also normally occurs. Consequently, in dealing with age of entry into unions, we shall separate those unions in which offspring normally appear (including both marital and non-marital types) from those in which reproduction is so strongly condemned that it is infrequent. We shall now deal with the first general class (paying attention mostly to marriage itself), leaving until later the discussion of non-reproductive sexual unions.

Since in pre-industrial societies the age of entry into reproductive unions is generally young, the question must be raised as to why the fertility-value of this variable is usually positive when on certain other variables it is often negative. From a broad functional standpoint, the explanation stems from high mortality. Not only does a high death rate normally prevail in underdeveloped societies from year to year, but there is always the danger of a sudden catastrophic rise in mortality. Early marriage therefore represents the maximum possible hedge against the threat of failure in population replacement. Entering a union at a young age does not commit one irretrievably to a large family, because all other means of reducing fertility come after this point. If a particular union is resulting in progeny that are too numerous under current circumstances, this eventuality can be obviated by abstinence, contraception, abortion, or infanticide. These means, precisely because they come later, can be utilized at a time closer to the actual impingement of new individuals on the resources of those responsible. If, on the other hand, the age of entry into unions is late, the potential fertility that is lost can never be recovered. The threat of mortality, from a societal standpoint, has reference not only to the potential offspring but also to the parents themselves. Early formation of unions helps to guarantee that the young adults will achieve at least some reproduction before they die.

This broad functional explanation does not, however, enlighten us concerning the specific institutional mechanisms by which early marriage is insured. These can best be understood in terms of family and kinship organization (involving rules of residence and rules of descent) and the control of property. Such mechanisms apply most clearly to formal marriage, although they may apply as well, though in lesser degree, to informal reproductive unions.

From the standpoint of kinship organization, an essential distinction is that between a joint household and/or clan system, on the one hand, and an independent nuclear family organization on the other. When the clan is the unit controlling the property (whether the latter consists in herds or land), the question of inheritance does not normally arise, because the clan is immortal. When the joint family is the controlling unit, the question arises only when the joint family divides; the joint family, however, does not divide when the offspring marry, but rather, at the earliest, when the father dies. Thus, in societies having a joint household (and a fortiori in those having a strong clan organization), marriage is in no way made contingent on the possession of separate property by the newly married pair.

Furthermore, with strong clan or joint-household control (or both), marriages are usually arranged by the elders, who are often motivated to make the arrangements early in the lifetime of the prospective mates, i. e., before

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premarital license prevails in 70 per cent of our cases. In the rest, the taboo falls primarily upon females and appears to be largely a precaution against childbearing out of wedlock rather than a moral requirement." George P. Murdock, Social Structure, New York, 1949, p. 265. On p. 5 the author gives slightly different figures, but the majority of his societies still permit premarital sexual relations.

puberty. Religious prescription may require this result, and the economic exchanges involved in betrothal may be structured in such a way as to yield an advantage to the parents who marry their daughter early. If the system is one of patrilocal residence, for example, a grown daughter remaining in her parental home is an anomaly. Not only does her presence run counter to the normal division of labor by sex, which assumes the complementarity of husband and wife, but she must adjust to the wives of her brothers coming into the household. Add to this fact that the daughter, as a prospective spouse, is most in demand by other families when she is young, first because she then has a greater potential fertility ahead of her, and, second, because she is more attractive sexually and fits more easily into a subordinate status in her husband's parental home. If, then, there is a substantial brideprice or groomprice at marriage, the girl's kin stand a better chance of a favorable bargain if they marry her off early. This may help them in procuring wives for their sons.

In societies having neither a strong clan nor a joint family, the forces leading to early marriage may be overbalanced by others. The Irish family, for instance, has long been organized in terms of neolocal residence and hence marital rather than filial solidarity. This being true, land had to be obtainable or marriage postponed. During the greater part of the eighteenth century land was scarce and could not be subdivided because the economy was predominantly pastoral. Consequently, an obstacle to early marriage "was the difficulty of acquiring a settlement upon which a new family might depend."[7] Later, during the sixty years before the Famine, when the potato became the staple food and the economy shifted from pastoralism to cultivation, couples could get property at marriage by subdivision of the land, thus removing temporarily the main obstacle to early marriage. But with the crisis of the Famine, the futility of progressive subdivision led to the Land Purchase Acts stipulating that the loans which transformed tenants into owners were granted only on condition that no subdivision would take place. Since the annuities ran for 35 years, this represented some restraint on subdivision.[8] A more powerful restraint was the fact that, once the tenants became owners, they grew unwilling to subdivide in behalf of their sons. The tendency was to retain only one son on the paternal land, the remainder of the children being dispersed, partly through migration abroad. The independent nuclear family was maintained, but the son who remained at home could not establish such a family until the father was willing to resign both authority and property. As a result the average age at marriage in Ireland became extremely advanced, reaching 29.1 for women by 1926.[9]

Lest our characterization of Irish family organization as neolocal appear surprising, it should be noted that although the Irish have been interpreted as having a joint household and patrilocal residence,[10] the opposite seems to be true. Even if one or two sons remain at home, the resulting menage is not what is ordinarily called a joint household; because in Ireland marriage implies the independence of the son. When the son brings a bride into what was

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(7) K. H. Connell, The Population of Ireland, 1750-1845, Oxford, 1950, p. 89 [underscoring ours].

(8) See Elizabeth R. Hooker, Readjustments of Agricultural Tenure in Ireland, Chapel Hill, 1938, esp. pp. 55-57, 106, 151, 208.

(9) A. M. Carr-Saunders, World Population, Oxford, 1936, p. 91. Cf. James Meenan, "Some Causes and Consequences of the Low Irish Marriage Rate", Journal of the Statistical and Social Inquiry Society of Ireland, 86th session, 1932-33, pp. 19-27.

(10) E. g., Conrad M. Arensberg and Solon T. Kimball, Family and Community in Ireland, Cambridge, 1938, p. 80.

the paternal homestead, he brings her into a home that has been redefined as his, no longer his father's. The father has relinquished both ownership of the farm and authority over the son. As long as the father continues to own the land, the son who remains at home cannot marry because the land is necessary for the "match".[11] If marriage occurs, therefore, the fact that the parents are still in the home is merely adventitious--they have entered "the age grade of the dying".[12] Significantly, if irreconcilable conflict develops in the shared household, it is the parents, not the son and his wife, who must leave. "The bond between them [husband and wife] is stronger than that between son and parent."[13] Thus in Ireland the fact of sharing a house with the parents is not a reflection of the joint family ideal but of the force of circumstances. The fact of a common menage is socially defined in such a way as to comply with the ideal of a neolocal and independent nuclear family.

This independent nuclear family organization is neither unique to Ireland nor modern in development. In Northwestern Europe the custom of impartible inheritance (e. g., by promigeniture or ultimogeniture) was found in many areas during the Middle Ages. In some sections it was apparently customary for the old people to give their land to the heir before they died. Surrendering their authority, they expected only their keep off the land. The heir's marriage was contingent on the land being turned over to him; if his sisters and brothers stayed on, they could claim their keep but not the privilege of marriage.[14] The principle of no holding, no marriage,[15] operated to advance the average age beyond what it otherwise would have been. Furthermore, the notion of the independence of the nuclear family also manifested itself in the master-apprentice relationship within the medieval guilds; for marriage often did not occur until an adequate guild status had been acquired by inheritance, purchase, or dower.[16] There is thus evidence that European society has long emphasized the marital rather than the filial bond as the basis of family organization, with a consequent tendency to delay marriage.[17]

The emphasis on marital rather than filial solidarity, on neolocal rather than patrilocal residence, which appears to have delayed marriage in Ireland and Northwestern Europe contrasts sharply with the forces operating to precipitate marriage in an extended family system. In a truly joint household the authority of the elders continues after marriage; the marital bond is therefore subordinate to the filial bond and does not require economic independence on the part of those getting married. Such a family pattern is well known as the

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(11) Arensberg and Kimball, op. cit., pp. 107-122.

(12) Ibid., p. 123.

(13) Ibid., p. 128.

(14) George C. Homans, English Villagers of the Thirteenth Century, Cambridge, 1942, Chs. 9-10.

(15) Josiah C. Russell, "Demographic Values in the Middle Ages", Studies in Population, George F. Mair, ed., Princeton, 1949, p. 104.

(16) Josiah C. Russell, British Medieval Population, Albuquerque, 1948, pp. 163-164.

(17) Of course, not every society with neolocal residence shows a retarded age at marriage. In a primitive economy with high mortality, where no formal training or other obstacles to adult status must be hurdled, and where scarcity of persons rather than scarcity of land is the felt need, independent nuclear families may be formed by early marriage, e. g., the Netsilik Eskimos, Fox Indians, Andaman Islanders, Ruthenians.

ideal one in traditional China, India, Bantu Africa, and many other peasant or primitive cultures. In the Chinese case, the father maintains his tutelage over the married son and his control over the familial property until death. He consequently need not fear the marriage of his son as a threat to his authority, and therefore, unlike the Irish father, has no motive (at least in this regard) for postponing such marriage. On the contrary, to the extent that his son brings a wife into the house and has children, the old man's authority is extended. Indeed, it is only by the marriage of his son that the patriarch can fulfill his filial obligation to his father.[18]

Number 2. Extent of Permanent Celibacy

If late marriage can have a minus effect on fertility, so can permanent non-marriage. In both cases, if this effect is to be produced, there must be either continence outside of marriage, or the use of means to prevent intercourse from resulting in childbirth. In practice, non-marriage usually does produce a low rate of reproduction among the unmarried, because, as mentioned already, marriage in all societies is the preferred institutional arrangement for having children. It seems wise, therefore, to discuss "celibacy" primarily in terms of non-marriage, and to consider sexual continence only in so far as it illuminates that factor.

Although permanent non-marriage is obviously a more potent factor than mere postponement of marriage, it actually occurs less frequently and hence has less negative influence on fertility. Only rarely can a population be found where more than 20 per cent of the women complete the reproductive period without ever having married. Ireland is an extreme case, with 26.3% of its women aged 45-49 in 1946 still single.[19] If we assume that these women, had they married, would have had the same completed fertility as those who did, then their proportion represents an estimate of the loss of fertility due to non-marriage (excluding illegitimate births).[20] Thus the loss due to permanent non-marriage seems, even in the extreme case, scarcely to exceed one-fourth. Such a loss in fertility is greatly exceeded by that due to late age at marriage. For example, in Switzerland (where the data are readily available), if all women in 1941 who had ever married by ages 40-44, had married at ages 15-19 and had subsequently manifested the same age-specific fertility as those who had actually married then or did marry at some point prior to age 40, the reproduction would have been 75% greater than it actually was![21] In other words,

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(18) Marion J. Levy, Jr., The Family Revolution in Modern China, Cambridge, 1949, pp. 168-170. When the family head dies there is the problem of one of the sons assuming authority over the others. It is precisely at this point that the joint household often dissolves; but if it survives this crisis, as it may, it does so because of the past institutionalization of relative age as a factor in authority.

(19) Other cases of high proportions never married are Sweden (1945) 20.9%, Switzerland (1941) 20.1%, England and Wales (1931) 16.8%, Belgium (1930) 13.3%.

(20) Differences in mortality and possible fecundity as between married and unmarried women may introduce a small but probably not serious error into this estimate.

(21) This calculation excludes non-marriage as a factor, because the women who had never married by age 40-44 were subtracted from the women under consideration in each age group. In other words, 21.4% of Swiss women at ages 40-44 had never married. But the remaining 78.6% had married at

the gain in fertility if late marriage had been eliminated would have been approximately three times the gain (25%) if permanent non-marriage had been eliminated.

It is mainly in urban-industrial societies that the proportion of women never marrying by the end of the reproductive span exceeds 10%. In India in 1931 it was only 0.8%; in Ceylon in 1946, 3.4%; and in Malaya in 1947, 3.3%. Thus the underdeveloped areas generally show a very high plus value for fertility with respect both to variable number 1 (age at marriage) and variable number 2 (proportion ever married), whereas industrial societies often show rather low fertility-values on these.

We thus have to answer two questions: Why do all societies generally make less use of non-marriage than of late marriage in depressing fertility? Why do underdeveloped peoples make less use of both of these mechanisms than do industrial societies? Let us attempt to answer these two questions in order.

Given the low fecundity of the human species, no society can hope to replace itself unless either a majority of its women participate in reproduction or its mortality is rigorously controlled. Since most of man's history has occurred under conditions of heavy mortality--conditions which still prevail for many of the world's peoples--all viable societies have evolved social mechanisms that lead the majority of women to participate in reproduction. Their participation is organized through the institution of marriage, which links sex and reproduction to the care and socialization of children. This institution is in turn supported by its articulation with the rest of the social order. The marital relation thus becomes a general norm in terms of which the hopes and expectations of virtually all individuals are channelized. If for some reason the pressure of mortality is relaxed, the norm still continues in effect. Not only do normative systems change slowly, but there still remains the necessity for a family organization in terms of which reproduction and child-rearing are provided for. Thus individuals continue to anticipate marriage as a normal and important part of life, an event more easily postponed than foregone altogether.

In any case, an increase in non-marriage would not reduce fertility unless either coitus outside of wedlock were successfully banned or contraception and abortion were freely used. If the latter were readily available, they could be used within marriage, and the consequent reduction in marital fertility would obviate the necessity of denying marriage to a substantial portion of the population. If contraception and abortion were not readily available, non-marriage would be an effective brake on fertility only at the price of permanent sexual celibacy. Everything we know about human society indicates that this price is so high that no population is willing to pay it.

Since no society has ever attempted to incorporate permanent celibacy as a widespread custom, we have no conclusive evidence as to what it would do to a social system. We can, however, obtain some clues by examining countries in which permanent celibacy has appeared to an unusual extent and by examining organizations which have enjoined it as a rule. We can also say something on purely theoretical grounds concerning what it might do if utilized as the chief means of reducing fertility to a modern level. Limitations of space prevent

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various ages. If this 78.6% had all married at ages 15-19 and had from that age experienced the same age-specific fertility as those ever married at each age, their total fertility would have been 76% greater. Stated in terms of the potential fertility lost by late marriage, the figure is approximately 64%. The calculation is rough, because the data refer to 1941 and thus do not represent a true cohort analysis; but a refined calculation on a cohort basis should yield rather similar results.

our giving a complete treatment along these lines, but something can be said about each of them.

Because Ireland has an unusually late age at marriage and a high proportion who never marry, together with a strong prejudice against coitus outside of marriage, it provides the main example of a rather extensive practice of celibacy.[22] Has this adjustment exacted a price? To answer such a question is difficult. A puritanical attitude toward sex cannot be listed as a consequence, because this is part of the celibacy itself. That the Irish avoid reproduction outside of marriage is shown by their low illegitimacy rate--2.8% of all live births in 1921-1930 and 3.3% in 1931-1940.[23] However, such descriptions as we have suggest that a great amount of attention, community effort, and personality conflict go into controlling sexual expression. Having a social system that emphasized the marital bond and the nuclear family, the Irish cannot completely segregate unmarried females, as is done in Moslem countries. The young people must have some chance to participate in courtship and mate selection. But, given this system, the Irish seem to make an unusually strong effort to control sexual behavior. For a country not living under a dictatorship, the official censorship of literature and ideas is exceptionally rigid, and has as its main purpose the suppression of material pertaining to sex and reproduction.[24] Furthermore, the data on mental illness, which show a high rate for Ireland, indicate a possible consequence of such repression.[25]

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(22) David Glass, Introduction to Malthus, New York, 1953, pp. 27-54, shrewdly notes that Ireland is the only country which has come close to following Malthus' rules of conduct--"moral restraint" and no birth control. In other countries of Northwestern Europe, such as Sweden and Norway, a late age at marriage does not imply sexual abstinence, not only because illegitimacy is more tolerated but also because contraception is more freely practiced.

(23) Ibid., p. 37.

(24) For attitudes toward sexual behavior see Arensberg and Kimball, op. cit., Ch. 11; and also such literary and popular sources as Frank O'Connor, "Ireland", Holiday, Vol. 6, December 1949, p. 40; Seán O'Faoláin, "Love Among the Irish", Life Magazine, Vol. 34, March 16, 1953, pp. 140-157. Regarding censorship, the following passage from O'Faoláin is pertinent: "...Our censorship of books and publications, instigated by the clergy and submitted to, willy-nilly, by everybody, is a symbol of this fear of sex...In the 150 close-packed pages of the official register of books and periodicals banned by the Irish Censorship Board we find the names of almost every single Irish writer of note, some for one book, some for several. The banning is done in secret. There is no appeal to the courts of law..." See also an article, "Irish Challenge Censors' Methods", The New York Times, August 14, 1955, where it is pointed out that the Irish Censorship Board "has banned books by the most reputable Irish authors, including Sean O'Casey, Liam O'Flaherty, Sean O'Faolain, and Ireland's most brilliant short story writer, Frank O'Connor. Nobel prize winners have even come under the interdict...many works of worth are condemned on a few isolated marked passages, while the general tenor of the book is ignored...Even the works of Roman Catholic authors approved by the church authorities in Britain have not escaped the five Irish Roman Catholic Censors."

(25) In 1949 the proportion of hospital beds devoted to mental cases was 57% in Ireland, whereas it was only 49% in the United States. The rate of mental patients per 100,000 population in 1948 was 603 in Ireland as contrasted to 382 in the United States. Adventitious circumstances seem not

There appear to be few features in Irish life that compensate for whatever is lost through celibacy. Ireland has, for example, the lowest level of living of any nation in Northwestern Europe. All told, there is some ground for the hypothesis that Ireland is paying a price for its unusual degree of celibacy.

Celibacy as an organizational rule has been almost solely applied to religious personnel. Among those few religions which have adopted such a rule for their clergy, our evidence is most readily available for the Roman Catholic priesthood. As is well known, the application of the rule in this case encountered great difficulties. It required nearly nine centuries before the edict of non-marriage itself could be enforced with relative success. Priests were first commanded to separate from their wives and remain continent in 385 A. D. After that date there were periods when the ban against marriage could be safely ignored by priests, followed by periods when the Church was militantly purging its married clergy. Pope Gregory (Hildebrand) encountered such obstacles in enforcing the rule of non-marriage that he ordered the laity to withdraw their obedience from all members of the clergy who disregarded the papal canons on simony and incontinence. By so doing, he undermined a basic principle of the Church--clerical immunity--and thus as early as 1074 directly laid one of the foundations of the Reformation. Only by placing the sacrament of marriage in a lower position than that of the religious vow (Lateran Council of 1123) did the Church finally settle the issue of clerical marriage, although in practice such marriages occurred with some frequency after that--as late as the nineteenth century in some parts of Latin America, for example. In periods when the ban against marriage was being enforced, the Church still had to deal with sexual incontinence among its priests and nuns. "Solicitation" (the seduction of female penitents), concubinage, and other violations were so common as to cause chronic public scandal. In some areas priestly concubinage became, for long periods, a customary practice, and the sons of priests received preferment.[26] We can thus see that the enforcement of celibacy even for that small fraction of the population represented by the clergy was anything but easy.

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to account for this result. Though Ireland has a larger percentage of persons in the advanced ages than does the United States (24.7% at ages 50 and over as against 22.4% at these ages in the United States), she has a higher proportion under age 30. The fact that Irish medical services are less developed than in this country suggests that the comparison understates the difference in mental illness. In 1949 Ireland had only one hospital bed per 1,000 inhabitants, whereas the United States has 9.6, so that a higher proportion of mental cases in Ireland may never appear in the statistics.

(26) For the history of clerical celibacy in Europe, see Henry C. Lea, History of Sacerdotal Celibacy in the Christian Church, London, 1932, and A History of the Inquisition of the Middle Ages, Vol. 1, New York, 1888, pp. 31-32; Alexander C. Flick, The Decline of the Medieval Church, New York, 1930, Vols. 1-2, passim.; J. R. Tanner et al. (eds.), Contest of Empire and Papacy, Vol. 5 of Cambridge Medieval History, New York, 1926, esp. pp. 11-14, 40, 61-62, 73, 695; Eileen Power, Medieval English Nunneries, Cambridge, 1922, Ch. 11; Geoffrey Baskerville, English Monks and the Suppression of the Monasteries, New Haven, 1937, pp. 261-266; Joseph McSorley, An Outline History of the Church by Centuries, St. Louis, 1944, pp. 83, 154, 206-207, 237; H. J. Schroeder, Disciplinary Decrees of the General Councils, St. Louis, 1937, p. 193. For Latin America, see J. Lloyd Mecham, Church and State in Latin America, Chapel Hill, 1934, p. 48; Mary Watters, A History of the Church in Venezuela, 1810-1930, Chapel Hill, 1933, p. 211; Gilberto Freyre, The Masters and the Slaves, New York, 1946, pp. 446-452.

If we imagine a society in which celibacy is institutionalized and becomes a norm rivaling marriage, we can see that the result would be paradoxical and impossible. Should the celibate class be large enough to reduce the birth rate to a modern level without other means, it would have to contain at least half the population. For individuals on such a scale to be induced to make the sacrifice of celibacy, they would not only have to be firmly controlled (perhaps segregated from the rest of the community and thus divorced from the temptations of everyday life), but would also have to be ideologically indoctrinated, and, above all, socially rewarded. If the rewards were great enough to recruit people for the numerous celibate portion of the population, this class would inevitably occupy the top of the social ladder. But the celibate class would be too big to be an elite. Furthermore, the sheer fact of celibacy would not represent in itself a contribution to the productive capacity of the society. If the celibate population were given useful tasks to perform, the variety of functions would necessarily be great; and if all these received an indiscriminately high reward, some celibates would be receiving this return not because of their productive contribution but because of their celibacy. In this way, seeking to give half or more of its population advantages that at best only a few can be given (and doing so regardless of productive merit), the society would suffer an intolerable economic and social burden.[27]

After this analysis of the relatively minor role of permanent celibacy in fertility limitation, we are now ready for our second question: Why are late marriage and non-marriage more frequent in industrial than in pre-industrial societies?

Perhaps non-marriage occurs more often in industrial societies because these societies depend less upon kinship and the family as bases of social organization. The fact of being or not being married affects less the individual's economic chances. In pre-industrial societies, where the family is a productive unit, marriage has a high value for the individual. Also, where the partners to marriage are self-selected by a competitive process of courtship, as in modern countries, there tends to be a substantial proportion who are not successful in attracting a suitable mate.

The greater postponement of marriage in urban-industrial nations can be similarly explained. The necessity of lengthy training for skilled positions in an industrial economy, the often lengthy trial-and-error process of courtship, the necessity of economic self-sufficiency on the part of the newly married couple--all are conducive to marital postponement.

But in neither type of society is non-marriage likely to be as important a depressant of fertility as late marriage, because marriage remains the institutional norm in both cases. Wedlock may be postponed with some equanimity, but individuals who actually never marry have, in most cases, hoped that this would not be their fate. In Ireland, for example, clerical celibacy is certainly valued, but not permanent celibacy among laymen.[28]

Once again let us note that neither the postponement nor the total abjuration of marriage necessarily implies sexual celibacy. Hence no industrial

(27) Of course, a society could be imagined in which half or more of the women were forced to be celibate, the rest of the people living in polyandrous marriage. But such a speculation would evoke more paradoxes than that already sketched. A society capable of such deliberate organization could scarcely be expected to use celibacy alone as its means of controlling fertility. With other less drastic means available, the end would hardly justify the means.

(28) Arensberg and Kimball, op. cit., p. 69.

society today is required to use either method as a dominant means of controlling fertility, because other less drastic, less sacrificial, methods are available. It is clear that marital postponement, non-marriage, and abstinence within marriage, if they are effective in limiting fertility, all have a common feature--sexual denial; and all share the difficulties that this entails.

Number 8. Use or Non-Use of Contraception

Whereas the "intercourse variables" have a negative effect on fertility only through abstinence, neither the conception nor the gestation variables require this drastic behavior by the individual or the institutionalization necessary to insure such behavior. With the "conception variables" (of which the use or non-use of contraception is one), the pleasure of intercourse is not foregone. The individual, thus released from paying a heavy appetitive penalty for the decision not to have children, is much freer to decide this issue in terms of his economic and social interests alone.

With reference to contraception in particular, its apparent efficiency might lead one to expect a widespread use of it as a depressant of fertility. Yet we have already stated that this is one of the three variables which almost universally have a strong plus fertility-value in pre-industrial societies. Why, then, do these societies so widely exhibit the non-use of contraception? To answer this question, we must consider separately the two types of contraception.

8a. Contraception by chemical or mechanical means. In many primitive and peasant cultures the idea of chemical and mechanical contraception is known and attempts are made to apply it. Yet, even in situations motivating the individual to limit his fertility, this is not usually the means adopted, simply because the technology of underdeveloped societies cannot supply effective methods. In the absence of a knowledge of reproductive physiology, people in these societies have little sense of even the kind of instrumentalities to look for. Similarly, there is not enough knowledge of chemistry to give command over materials. The methods, therefore, tend to be hit or miss, with magic rather than science playing a prominant role. Lack of experimental technique leads one method to be valued as highly as another.[29] Even the methods that would actually accomplish the purpose of contraception are apt to be clumsy, sexually unsatisfactory, and unhealthful, e. g., insertion of an okra-like seed pod in the vagina (Bush Negroes of British Guiana); insertion of rags or finely chopped grass (Bapindas and Bambundas in Central Africa); insertion of dung (Egypt and other societies).[30] Furthermore, granted that a really satisfactory method is hit upon, such as possibly the use of a douche containing lemon juice or a decoction of the husks of mahogany nut (Martinique or Guiana),[31] the materials are likely to be available only in one locale or in certain seasons of the year. Thus the technology and economy of pre-industrial societies have not been equal to the task of providing a chemico-mechanical contraceptive that would be at once cheap, satisfactory, effective, and readily available.

8b. Contraception without chemical or mechanical means. Clearly such methods as withdrawal, intercourse without penetration, and various heterosexual

(29) Norman E. Himes, Medical History of Contraception, Baltimore, 1936, pp. 53-54, 99. See also Clellan S. Ford, A Comparative Study of Human Reproduction, New Haven, 1945, pp. 40-42.

(30) Himes, op. cit., pp. 10, 18-19, 63.

(31) Ibid., p. 17. Also see M. Soors, "La denatalité chez les Mongo", Zaïre, Vol. 4, May 1950, pp. 525-532.

"perversions" do not depend on scientific and technological progress. They are known and practiced in one form or another in nearly all societies.[32] Yet they seem to be insufficiently employed to represent a major control over fertility. They may be so employed in a few primitive societies, but apparently not in the civilizations such as that of China, India, and the Near East where huge population aggregates are found. For the most part, it seems, they are employed in extra-marital relations or in those cases where premarital intercourse is permitted but premarital pregnancy forbidden. But it is doubtful that such practices represent an important contribution to fertility control in whole societies. Numerous societies--some with a good share of the world's people--either do not permit the ordinary female to engage in premarital intercourse, or have such a young age at marriage that such intercourse would play a small role in any case. As for extra-marital relations, those societies which permit them under certain circumstances are not particularly concerned about the woman's becoming pregnant, because biological paternity is not stressed. Only those societies branding adulterous children as illegitimate would condemn the married woman's pregnancy by another man than the husband, and these would be societies which restrict extra-marital intercourse. For these reasons, to have an independent and significant effect on fertility, non-mechanical contraceptive methods would have to be used within marriage. We are therefore forced to ask why such methods are not more widely used within wedlock in pre-industrial societies.

The reader should recall that any society with a high mortality must in general motivate its members to view legitimate reproduction favorably. Under this pressure the cultures in question, as already pointed out, are so organized as to maximize fertility values in the early stages of the reproductive process --e. g., by early marriage. Although intercourse is one step later, it is still so early as to involve a risk of inadequate fertility. If conditions subsequently make children undesirable, measures can still be taken after conception.

An additional consideration is that the physical burden and danger of childbearing, and the responsibility for nourishing and rearing the child, fall

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(32) Himes, speaking of Europe, says that "coitus interruptus is doubtless the most popular, widely diffused method of contraception...and has been for centuries...[It] is probably nearly as old as the group life of man." Op. cit., pp. 183-184. He also cites numerous primitive tribes in which coitus interruptus is practiced. I. Schapera, writing of the Kgatla of Bechuanaland, says: "The commonest method of contraception locally practiced is coitus interruptus...It is widely employed not only by married people, but also by unmarried lovers." Sometimes the woman, by moving her hips so as to extrude the penis just before ejaculation, accomplishes coitus interruptus without the male's cooperation. Married Life in an African Tribe, New York, 1941, pp. 222-223. Coitus inter femora is practiced in many societies, particularly by the Bantus in Africa. Girls may wear special girdles designed to avoid penetration. C. Daryll Forde, Marriage and the Family among the Yakö of South-Eastern Nigeria, London, 1941, p. 14. Bantu tribes, permitting sexual relations but not pregnancy before marriage, teach (or did teach) their young people how to have intercourse without penetration, the unbroken hymen in some tribes being regarded as an important index of virginity, insisted on at marriage.

Alfred C. Kinsey et al. found "petting to climax" to have been practiced by 24% of the male sample (blown up to represent the U. S. male population) by age 21, and by 50% of college-educated males. The cumulative incidence among females was less but still substantial, being 24% for the college-educated at age 20. Sexual Behavior in the Human Male, Philadelphia, 1948, pp. 531-542, and ...in the Human Female, 1953, p. 270.

mainly on the mother. If therefore there is a wish to avoid childbirth, this wish is apt to be hers rather than her husband's. It happens, however, that the non-chemico-mechanical methods of contraception are the ones requiring the co-operation and partial frustration of the male. Since he is not under the pressures that affect his wife in this matter, he may be reluctant to aid her in avoiding pregnancy.

The social insulation of the two sexes is often carried so far that communication between them is difficult. This insulation is particularly observable in regard to sexual behavior, which tends to be surrounded by taboos and rituals. As between husband and wife, sexual intercourse, by virtue of being the special bond and therefore the focus of anxiety and conflict between them, may be the topic they discuss with least freedom. Thus the cooperation necessary for contraception is made difficult.

In such terms we can understand why the available methods of contraception receive scant use in underdeveloped societies. Which of the considerations mentioned plays the greatest role is hard to say, but the fact should be emphasized that not all the reasons for limiting births are predictable at the time of intercourse--particularly in simple societies that live close to the environment and are threatened by quick catastrophe. The individual couple may, therefore, as we shall see later, limit fertility after rather than at the time of intercourse.

Number 9. Voluntary Control over Fecundity

Like chemical and mechanical contraception, satisfactory control of fecundity is beyond the technical capacity of pre-industrial societies. Neither the reduction nor the enhancement of fecundity by harmless medical measures appears possible in such cultures. Operations on the male external genitalia can be performed, such as subincision and castration, but these are either too drastic to be harmless or have little effect on fecundity.[33]

We may conclude, then, that pre-industrial societies are plus on variable number 9. But so are industrial societies. The latter may have even more of a plus fertility-value on this variable than simple societies because they can, and usually do, forbid sterilization and, at the same time, foster medical treatment for sterility, thus enhancing the fecundity of partially sterile couples.

Although modern science makes harmless sterilization possible, it has not yet been used, except in Puerto Rico, as a popular method of avoiding children.[34]

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(33) Castration is so drastic that it is apparently never used with enough frequency to affect group fertility. Subincision, the splitting of the penis in such a way that the semen is expelled from the lower part rather than through the glans, seemingly has little effect on fecundity, depending in part on the position assumed during intercourse. Also the practice has a very limited distribution even in primitive society and seems unknown in more advanced pre-industrial societies. Among the Australian aborigines, where it is found, opinion differs as to its effects. German theorists, according to Himes, have generally held that the operation lowers fertility and is so intended. Modern anthropologists, on the other hand, have denied both these contentions. Himes himself believes it may have some negative effect of this kind. Op. cit., pp. 41-51.

(34) See J. M. Stycos, "Female Sterilization in Puerto Rico", Eugenics Quarterly, Vol. 1, June 1954, pp. 3-9.

The Puerto Rican case suggests, however, that sterilization may in the future become more widely diffused in underdeveloped areas. If the operational technique were improved to the point where it could be easily reversed--so that it could be used for the spacing, as well as for limiting the total number, of children--it might become the principal means of reducing fertility in backward areas.

Number 3a. Time Between Unstable Unions.

Any negative effect on fertility from variable 3a is a function of both the rate of dissolution of unions and the time lost between them. If unions are stable, or if they are unstable but no time is lost between them, fertility will not be affected adversely.

With reference to marital unions, pre-industrial societies seem generally to have a low rate of dissolution. True, there are certain exceptions to this rule. Some of the Islamic peoples show a tendency toward marital instability, and in some primitive societies the clan or joint household takes such precedence over the nuclear family that the latter tends to be somewhat unstable.[35] On the whole, however, the institutional structure of pre-industrial groups buttresses marriage in such ways as to give it considerable stability.

When a society has a significant proportion of informal unions which it regards as inferior to legal marriage but in which reproduction is nevertheless expected (e. g., "consensual unions" in Latin America and "common law" unions in the British West Indies), one of the features of such unions is that they tend to be unstable. In such cases the woman may wait some time before entering a new union, and the fertility lost may be substantial. For a small sample of women in Jamaica (where around 70% of the births are illegitimate) the reduction in fertility due to the instability of unions was approximately 37%.[36] The informal type of union arises as an institutional form from various historical causes. In societies that have been disorganized by Western contact, they may appear abundantly, and legal marriage itself may become unstable.[37] In other instances where the social order has grown largely out of a former slave class,

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(35) See Ralph Linton, Study of Man, New York, 1936, Ch. 10. Murdock, op. cit., p. 3, criticizes Linton for holding that in some societies organized on a "consanguine" basis the nuclear family plays an insignificant role, but the fact is that in such cultures marital instability may have little disorganizing effect. See K. Davis, "Children of Divorced Parents", Law and Contemporary Problems, Vol. 10, Summer 1944, pp. 700-710.

(36) Judith Blake, "Family Instability and Reproductive Behavior in Jamaica", Current Research in Human Fertility, Milbank Memorial Fund, New York, 1955, pp. 26-30.

(37) Margaret Mead, Changing Culture of an Indian Tribe, New York, 1932, pp. 14-15, Ch. 10. Schapera, op. cit., Ch. 10; Migrant Labour and Tribal Life, London, 1947, pp. 183-189; and "Cultural Changes in Family Life", The Bantu-Speaking Tribes of South Africa, London, 1937, pp. 380-385. The literature covering the impact of Western culture on native peoples is so enormous that one could document indefinitely the tendency of such contact to produce illicit sexual unions and instability in such unions and in marriage.

informal unions may be both more numerous and more unstable than legal marriages.[38]

With reference to premarital unions, there is every evidence that in the many societies where these are permitted they are, as a rule, highly unstable, amounting in many cases to adolescent promiscuity. However, there is ordinarily little time lost between such liaisons; few societies permit reproduction in them; and, given a young age at marriage, most such unions occur at an age when adolescent sterility seemingly reduces the number of conceptions.

It follows that pre-industrial societies generally have a plus fertility-value with respect to variable number 3a, but the exceptions are more numerous than was the case with the other variables so far considered.

Number 3b. Post-Widowhood Celibacy

What effect the high rate of widowhood found in pre-industrial societies has on fertility depends on the institutional position of the widow. In many such societies she loses little time from exposure to intercourse, because she soon marries again. In other pre-industrial cultures, however, the widow either must wait for a protracted period or is subject to a distinct prejudice against remarrying at all. An important problem in analyzing the institutional impingements on fertility is the discovery of why some societies take one course in this regard and others take the opposite course.

If we study those societies in which remarriage occurs universally and soon, we find that they are the ones requiring the widow to marry a kinsman of the deceased husband (levirate). Such societies are usually primitive, practicing a shifting cultivation, hunting, or pastoral pursuits, and are characterized by strong clan or lineage organization. Marriage involves substantial economic exchanges and, if the system is patrilineal and patrilocal, these are weighted in favor of the bride's lineage (brideprice). The woman brought into the clan or lineage as a wife is conceived as belonging to this clan, which has paid the brideprice; her children, who are automatically members of the husband's lineage, represent her contribution in return for the cost of procuring her. When the woman is widowed, the lineage retains control over her, not only because a price has been paid for her but also because her children must remain with the lineage. If she still is fecund, the lineage feels it would be losing potential children if she did not remarry. But remarriage to an outsider would be unsatisfactory, because the children of that union would belong to another lineage. Hence the remarriage must be within the clan. Since in the exchanges cementing the first marriage, the husband's nearest relatives bore the main cost, it is natural that his close kin (notably his brothers) should have first claim on the widow. If the deceased husband has no actual brothers, one of his "classificatory brothers" can be substituted. In anticipation of her possibly entering a leviratic union, a woman's relation with her husband's actual and classificatory brothers is often one of privileged familiarity. The term for "husband's brother" may be the same as that for "husband". The social structure clearly demonstrates that the clan is thinking of the widow in terms of her potential production of children. Among the Nuer, for instance, even if the widow should take as a lover a person outside the clan (she cannot legally marry outside),

(38) T. S. Simey, Welfare and Planning in the West Indies, Oxford, 1946, passim. F. M. Henriques, Family and Colour in Jamaica, London, 1953, passim. G. W. Roberts, "Some Aspects of Mating and Fertility in the West Indies", Population Studies, Vol. 8, March 1955, pp. 199-227. R. T. Smith, "Family Organization in British Guiana", Social and Economic Studies, Vol. I, February 1953, pp. 87-111.

the children are viewed as the descendants of the dead husband and therefore as members of his, not the lover's, clan.[39]

In many societies, on the other hand, the widow is forbidden to marry a close relative of the deceased husband. These seem to be cases in which the clan, however important it may once have been, has receded in economic and political significance, seemingly as a result of technological advance and greater class stratification. The economy is that of a more stable agriculture in which the same land is intensively cultivated year in and year out. Under such circumstances the joint household acquires more independence and more significance as an economic unit than it seems to have in most primitive societies. The distinction between relatives in different households thus takes precedence over their solidarity as members of the same lineage or clan. To be sure, the woman marrying into the joint household may do so in terms of some form of economic exchange, but this exchange is between individual households rather than clans. The widow and her children accordingly belong to the deceased husband's household. Remarriage to one of her dead mate's brothers or other close male relatives, however, would be structurally inappropriate, because the joint household is always subject to dissolution and must be so organized as to minimize the complications of such dissolution. Unlike the clan or lineage, which is immortal and indefinitely expandable, the household is a residential economic unit which can easily grow too large for its immediate resources. With stable agriculture, the household must be near the land it works. If its memberships increases, it must ultimately break up because the land required for sustenance will be too distant. When the household does break up, usually at the death of the male head, it does so by the separation of its nuclear families.[40] Accordingly, even when the nuclear family forms part of a joint household, it is visualized not only as a separate unit but also as one that may in the future have its own independent residence. A widow's remarriage to one of her husband's relatives within the household would conflict with this idea of potential independence. It would inextricably merge two nuclear families. It would require polygyny and would emphasize the solidarity of the sibling relationship rather than the father-son relation so central to the independent joint household.

Stable agrarian societies not only forbid the widow to marry within the circle of her husband's kin but also often frown on her marrying anyone at all. This additional prejudice seems likewise to be explicable in structural terms. For the widow to marry outside would require that some agency make a match for her, because marriages in traditional agrarian societies are arranged by persons other than the parties to the union. However, her family of orientation is no longer responsible for her. The family of her deceased husband is restrained from taking the responsibility for several reasons. It would, in seeking a mate for the widow, have to treat her as a daughter, which might interfere with the rights of the actual daughters. Furthermore, since she is a widow and is older, she has become less valuable than upon her first marriage, so that it is difficult to get her married at a social level reflecting favorable on the family's prestige. If the widow has children, her marriage outside the immediate kin would require her separation from them. It is thus understandable why traditional agrarian societies, especially where the joint household is normally preferred, should exhibit a prejudice against widow remarriage. Such unions certainly do occur, particularly in the lower classes which cannot carry out the joint family ideal, but the prejudice may be strong enough to prevent a high

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(39) E. E. Evans-Pritchard, Kinship and Marriage among the Nuer, Oxford, 1951, pp. 112-123.

(40) For mention of the joint household's vulnerability to change and its consequent fissive tendency, see Murdock, op. cit., p. 36.

proportion of widows in the upper classes from remarrying.[41] In India the caste controls reinforce those of the joint household in preventing widow remarriage. Since such unions are thought to lower the caste's prestige, and since marriage is endogamous within the caste, both parties to a remarriage are condemned. For this reason the reduction of fertility due to widow agamy is probably greater in India than in any other country, especially because of the early age at marriage and the high mortality there.

Number 11. Voluntary Control over Foetal Mortality

Underdeveloped societies have few means for lessening foetal mortality, but they do have readily available means, through abortion, for increasing such mortality. In fact, abortion is widely practiced in pre-industrial societies, being the individual's principal means of limiting fertility.[42] Since medical measures to avoid foetal mortality do not, at least as yet, have as much influence on fertility as voluntary abortion can and does, we can say that whether a society has a plus or minus fertility-value with respect to variable 11 depends primarily on the extent to which it practices abortion. Accordingly, some pre-industrial societies are on the "plus" side (forbidding abortion and practicing it little) but many others are on the "minus" side (practicing abortion to a considerable extent). If we grant that interference with conception is less hazardous to health than interference with pregnancy, an important question for us is why abortion is so much more frequently used in underdeveloped societies than contraception.

In answering this question, one can point to the following considerations: (a) as compared to mechanical and chemical means of contraception, abortion is

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(41) Levy, op. cit., p. 46, points out that although the Chinese gentry have always frowned on widow remarriage, the peasants have usually practiced it. In fact, if a peasant widow was young and lacked grown sons, remarriage was inevitable. As the peasantry is said to comprise as much as 80% of the population (p. 44), widow celibacy is hardly characteristic of China as a whole, although gentry patterns set the ideals for the entire society. Olga Lang, without distinguishing between gentry and peasantry, says that remarriage is frowned on. Chinese Family and Society, New Haven, 1946, p. 53. She says (p. 126) that poor men often marry widows because they are easier to get than virgins. Any divorcee or widow can find a husband if she is willing to marry beneath her status. With regard to the absence of anything like the levirate in China, it is interesting to note that Miss Lang says (p. 21) that "early in the feudal period, under the Chou dynasty (ca. 1027-256 B. C.), the clan began to divide into economic families." Today, even in the South where clans are of some importance, they have no real authority in family matters. The strongest clans in Central and North China lack the essential of clan life, a fair amount of common property (pp. 177-178).

(42) Ford, op. cit., pp. 50-51, found that most of his tribes took cognizance of abortion. In eleven it was specifically stated to be forbidden, and in eight it could be inferred to be forbidden; in 21 it was permitted to the young girl who finds herself pregnant, and in 4 this could be inferred to be the case; and in 12 a married woman was allowed to practice abortion if she believed that she had become pregnant through an adulterous intrigue. Himes regards abortion as widespread in primitive societies (op. cit., p. 52). A recent study by George Devereaux, Abortion in Primitive Society, New York, 1955, pp. 25-26, cites cases of tribes where abortion is quite frequent.

technically simple;[43] (b) In contrast to such non-chemico-mechanical methods as coitus interruptus or coitus inter femora, abortion is not applied at the time of intercourse and does not require cooperation between man and woman. It is a woman's method and can be practiced without the man's knowledge. (c) Unlike contraception, it is completely effective. (d) Once an undesired pregnancy has occurred, the need for abortion is certain, whereas at the time of intercourse there is always the chance that pregnancy will not eventuate anyway. (e) Although a child may be desired at the time of intercourse, subsequent events may alter this attitude, at which time abortion rather than contraception is a remedy.

A note on infanticide. Although infanticide is not dealt with as an integral part of our analysis because it does not affect fertility, one should note that it is virtually a functional equivalent of abortion in controlling family size, and that it too is practiced widely in pre-industrial societies, much more so than contraception. The rationale for its use is much the same as that for abortion, but it does differ from the latter in at least three respects. First, infanticide allows the progeny to be selected by sex, as shown by the custom of female infanticide. The logic of this practice is exemplified by the Netsilik Eskimos:

> The most glaring consequence of the struggle for existence is manifested in the way in which they try to breed the greatest possible number of boys and the fewest possible girls...girls are killed at birth, if they have not already been promised to a family where there is a son who some day is to have a wife...They hold the view that if a woman is to suckle a girl child it will be two or three years before she may expect her next confinement...A hunter must take into consideration that he can only subject himself and his constitution for comparatively few years to all the strain that hunting demands...Now if he has sons, they will as a rule be able to step in and help just when his own physique is beginning to fail. Thus it is life's own inexorability that has taught them the necessity of having as many sons as possible. Only by that means may they be certain that they will not need to put the rope around their own neck too early; for it is the common custom that old people, who can no longer keep themselves, prefer to put an end to their life by hanging...[44]

Olga Lang discusses the persistence of the immemorial custom of female infanticide in China. The hospital records used for her study "contained matter-of-fact references to infanticide made by Chinese social and medical workers indicating that it was taken for granted. Much more often, however, infant daughters have not been killed outright. What happens is that the small amount of food available for the family is unequally distributed: the son gets the larger share and the daughters are practically starved. Hence the frequent epidemics have taken a heavier toll of girls than of boys."[45] Much the same could be said of India.

Second, infanticide also allows the offspring to be selected according to physical status, weeding out those with deformities, bad health, or unacceptable

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(43) Premature labor can be induced by killing the foetus. This can be done by beating, pressing, or massaging the abdomen; by drinking poisons or strong emetics or laxatives; by piercing the foetus or amniotic sac with sharp reeds or instruments; or by wearing a tight belt. See Ford, op. cit., p. 52; Devereaux, op. cit., pp. 27-42.

(44) Knud Rasmussen, The Netsilik Eskimos, Copenhagen, 1931, pp. 139-140.

(45) Lang, op. cit., p. 150.

physical or racial characteristics.[46] Third, it can be practiced when the circumstances of birth are considered to be abnormal and ritualistically taboo. Twins, children born with feet first or with teeth, infants whose mothers died at their birth,[47] and offspring born on unlucky days are typical victims.[48] Fourth, whereas abortion may injure the health of the mother, infanticide obviously does not.

A disadvantage of infanticide may seem to be that since a child has already been born, a living person is being killed. However, the newborn child is often not viewed as a member of society until he has passed through some sort of ceremony (amphidromia in ancient Greece, presentation of the child to the father in China) which defines him as such. The destruction of the child is therefore viewed psychologically in much the same light as abortion.

Number 4. Voluntary Abstinence within Unions

Abstinence within unions is practiced much more, on the average, in pre-industrial than in industrial societies. The effect of such abstinence on fertility, however, depends on the circumstances; for there are at least four types of restriction--post-partum, occasional, gestational, and menstrual. The first two types tend to limit fertility, while the last two, if they have any effect at all, tend to increase it.

Post-partum abstinence occurs in nearly all societies, including our own. The amount of time involved, however, varies greatly--all the way from one to two weeks in some societies to two to three years in others. Many pre-industrial societies insist upon abstinence for an arbitrary period of time after birth, usually for several weeks or months. In a few instances the duration of abstinence is fixed by some developmental stage of the child--e. g., when the baby first crawls, sits up, walks, or cuts its teeth. In many cases the taboo on coitus extends through the lactation period, which may last two to three years.[49] Not all of the time involved, of course, represents a loss of fertility, because ovulation is often delayed or occurs sporadically for a time after parturition. It is only when the period of abstinence extends to two months or more that a loss of fertility can be assumed, although even then it may not be quite commensurate with the amount of time covered. These longer periods, though found frequently in primitive and peasant societies,[50] are not customary in industrial countries.

Long post-partum taboos on intercourse obviously help to space out children, but this is not the reason usually given in communities that practice such taboos. Instead, a violation of the taboo is viewed as being magically dangerous to the child or the parents.[51] Such notions probably lead to the observance

(46) Hutton Webster, Taboo: A Sociological Study, Stanford, 1942, pp. 59-61.

(47) Ibid., pp. 59-65.

(48) Linton, Study of Man, op. cit., pp. 194-195, with reference to the Tanala of Madagascar. In a letter to W. Lloyd Warner quoted by Himes, op. cit., p. 8, Linton says: "I do not think that there was any idea of limiting population in it [infanticide], but the losses were severe. In at least one tribe all children born on three days in each week were killed."

(49) Clellan S. Ford and Frank A. Beach, Patterns of Sexual Behavior, New York, 1951, p. 219.

(50) Webster, op. cit., pp. 67-71.

(51) Ford and Beach, op. cit., p. 219.

of the abstinence rules. In addition, it should be noted that in many instances the male has access to another wife (if he is polygynous) or to a concubine or other available woman. The social structure may encourage observance of the taboo in another way. When, as in India, the wife customarily goes to her parents' home to bear each of her first two or three children and stays there for a few months after the confinement, the taboo is enforced with ease. Thus the fact that 80% of Indian villagers in one study reported post-partum abstinence of six months or more indicates a significant loss of fertility from this cause. cause.[52] Doubtless similar or greater losses occur in many other agrarian societies.

The "occasional" restrictions on sexual intercourse are those occurring in connection with regular holidays and special ceremonies, tabooed days of the week, and important communal tasks (war, economic undertakings, etc.).[53] The exact amount of time lost to reproduction in this way has seldom been calculated, but the Indian field study just cited found that the average number of days of avoidance for religious reasons was 24 per year in a rural village, while in a middle class housing project it was 19.[54] If these days occur sporadically, they hardly represent much loss of fertility, because they are practically comprised within the normal frequency of intercourse; but in many societies the abstentions extend over substantial periods. "The natives of the Mortlock Islands, a part of the Caroline group, proscribe any sexual intercourse in time of war; a man who violated the rule would die a sudden death. During the fishing season, which lasts for six to eight weeks, every Yap fisherman is subject to many restrictions...Women are very strictly tabooed to him..."[55]

In contrast to post-partum and "occasional" taboos on coitus, gestational abstinence obviously cannot diminish fertility. The only question is whether it may slightly increase fertility. Most societies proscribe intercourse during some part, but seldom during all or even the major portion, of the gestation period. Only seven of the primitive groups in Ford's sample extended the taboo to the greater part of the period.[56] Usually it is toward the end of the pregnancy that the prohibition applies. If intercourse during the later stages occasionally induces miscarriage or causes puerperal infection, as is sometimes claimed,[57] then the taboo may enhance fertility, but only slightly.

Similarly, the almost universal prohibition of coitus during menstruation can have little or no negative effect on fertility. Such abstention, when fertilization is least likely, tends to concentrate sexual activity in the more fertile part of the menstrual cycle. In some pre-industrial cultures the taboo is extended for a few days after the menstrual flow has ceased (as among the ancient Hebrews), which has the effect of concentrating coital activity still more directly on the days when conception is most likely.

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(52) C. Chandrasekaran, "Cultural Patterns in Relation to Family Planning in India", Proceedings of the Third International Conference on Planned Parenthood, 1952, Bombay, p. 78.

(53) Ford, Comparative Study of Human Reproduction, op. cit., pp. 28-29. Webster, op. cit., pp. 132-139.

(54) Chandrasekaran, op. cit., p. 78.

(55) Webster, op. cit., p. 134.

(56) Ford, op. cit., p. 48.

(57) Ibid., p. 49.

On the whole, primitive and peasant societies appear to have a greater fertility loss through intra-marital abstinence (variable number 4) than do industrial societies. They have considerably more post-partum and "occasional" abstinence, and the effect of these in inhibiting reproduction is not fully counterbalanced by the fact that underdeveloped societies also occasionally have longer menstrual and gestational taboos (which may slightly enhance fertility).

The Other Intermediate Variables

There remain four variables--number 10 (which usually has a low fertility-value in non-industrial societies) and numbers 5, 6, and 7 (which seem indeterminate in their values). All four of these variables appear not to be clearly determined by institutional patterns in different cultures. If there is any difference in their fertility-values as between one type of society and another, the difference seems to be more a function of the general level of living than of the specific institutional structures. Perhaps one clue to this circumstance lies in the fact that three of the four variables (10, 5, and 7) are defined as involuntary in the sense of not being under control and hence not amenable to motivational determination. The other variable (number 6, frequency of coitus), though subject to individual control, is possibly too private and too linked up with organic capacity to be culturally controlled.

With respect to number 10--foetal mortality from involuntary causes--we have said that the fertility-value is generally low in pre-industrial societies; because the data available indicate that stillbirth rates are greater in such societies. However, the conclusion is tentative, because adequate comparative information does not exist for miscarriage rates.

Number 5--involuntary abstinence--presumably varies according to several disparate factors. In so far as health or sickness may be involved, the non-industrial peoples would probably exhibit a higher degree of such abstinence. The same inference might be drawn with regard to impotency, except that this condition is often caused by psychological determinants which may be more prevalent in industrial cultures. Another cause of involuntary abstinence, the separation of couples due to migration, would seem to vary according to the particular historical circumstances of the society. Except under conditions of European contact, indigenous groups apparently have little individual mobility. Clearly, these divergent influences affecting involuntary abstinence can run counter to each other. It is therefore difficult to claim, for this variable, any consistent overall differences between societies. We are also handicapped by an almost total lack of data, for no comparative information has been collected with this issue in mind.

Variable number 6--frequency of intercourse--possibly favors fertility more in underdeveloped than in industrial societies. But at best the evidence for this view is indirect, drawn solely from a few advanced societies where coital frequency appears greater among the manual than among the sedentary classes. Such direct evidence as we have supports no view at all. Average figures on "coital frequency" given in the literature, usually stated as so many times per week, are ambiguous, because it is unclear whether they mean every week or only those weeks when coitus is not impossible because of sickness, absence, menstrual, or other taboos, etc. Also, the comparative frequency figures cited in the literature are fantastic, showing variations from one society to another that are wholly inexplicable.[58] We have found no reliable

(58) Thus Ford and Beach report as an apparent fact that "the Aranda of Australia have intercourse as often as three or five times nightly, sleeping

evidence that the average frequency of intercourse for comparable age groups varies significantly as between one society and another, and certainly none which indicates that this is a significant factor in inter-societal variations in fertility.

With respect to variable number 7 (involuntary sterility) we again have little evidence. The hard conditions of life in pre-industrial societies may give rise to a considerable amount of low fecundity or absolute sterility--particularly in the latter part of the woman's reproductive span; and in given instances, after contact with highly civilized peoples, venereal disease may have a pronounced effect of this sort. On the other hand, the nervous tension and artificial modes of life in urban-industrial populations may possibly tend to lower fecundity to some extent.

Patently, the comparative fertility-values of the four intermediate variables just discussed are unknown. Not only is evidence lacking, but there is no sound line of reasoning by which the behavior of these variables can be linked up with specific institutional patterns. At most, there may be some connection in each case with the general level of living. The evidence for this is best with respect to number 10, but the other three must be left for the time being as indeterminate.

Conclusion: The General Pattern

Any analysis of institutional factors in fertility must first explain the well known fact that underdeveloped societies in general have a higher rate of reproduction than industrial societies. The explanation, in brief, is that the pre-industrial peoples, in the face of high mortality, have had to develop an institutional organization which would give them sufficient reproduction to survive. However, analysis at this level does not carry us very far. In order to study the effects of institutional factors, one needs to break down the reproductive process itself so as to distinguish clearly the various mechanisms through which, and only through which, any social factor *can* influence fertility. In trying to do this, we have found eleven "intermediate variables". When analysis is made along those lines, it can be seen that the generally high fertility of underdeveloped areas does not mean that these areas encourage high fertility in every respect. As we have seen, they do not have high plus values on *all* the intermediate variables. Why, then, do they have low values in some respects and not in others?

It is possible to discern a systematic difference between underdeveloped and developed societies with reference to the eleven variables. In general, the pre-industrial societies have high fertility-values for those variables farthest removed from the actual moment of parturition and which, therefore, imply an overall outlook favorable to fertility. To a much greater degree than industrial societies, they tend to encourage early exposure to intercourse --exhibiting a far younger age at marriage and a higher proportion married.

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between each sex act", and that for Chagga men "intercourse ten times in a single night is not unusual". Nothing is said about how these bizarre statistics are gathered, or about what age groups in the population are being considered. The authors say simply, "it is reported that", or "it is not unusual that", etc. Such reports are all the more questionable since societies apparently with a similar level of living are said to have extremely different figures--some at "once a week" or "once or twice a week"--without any explanation of why they should be so low and others fifteen or twenty times as high. *Op. cit.*, pp. 78-79.

They thus lose little potential fertility by delaying or avoiding the formation of unions. After unions have been formed, these societies tend to enjoin more abstinence than industrial societies do (and therefore have lower values on variable number 4), but such "sexual fasting" arises from religious and magical motives rather than as a deliberate fertility control measure, and it does not appear to be great enough to have a substantial negative effect on fertility.

Underdeveloped societies also have high fertility-values for the conception variables. They practice little contraception and virtually no sterilization. Consequently, the tendency is to postpone the issue of controlling pregnancy until a later point in the reproductive process, which means that when a couple wishes to avoid children, those methods nearest the point of parturition--abortion and infanticide--are employed. These have the advantage, in societies living close to privation, of being nearer to the actual moment when the child must be supported.

Industrial societies, on the other hand, exhibit low fertility-values for those variables involving the early stages of the reproductive process, especially age at marriage, proportion married, and contraception; and they manifest high fertility-values for the variables in the later stages, especially infanticide. It follows that for many of the variables the two types of society exhibit opposite values. This is true for age of entry into unions, permanent celibacy, voluntary abstinence, contraception, and (if included as a variable) infanticide. It is not necessarily true of the time spent between or after unions, of sterilization, or of abortion; and it, of course, is not true of those variables characterized as "indeterminate"--involuntary abstinence, frequency of coitus, or involuntary infecundity. But the general contrast is sufficiently clear to require explanation.

A key to the position of the industrial societies lies in the fact that, as compared to pre-industrial cultures, they have achieved their lower reproduction, not by acquiring low fertility-values for all the intermediate variables, but by singling out particular ones as the means to that result. They took those means of reducing fertility which involved the least institutional organization and re-organization and which involved the least human cost. In the secular decline of the birth rate they relied more heavily on the mere postponement of marriage than on non-marriage. They relied less on abstinence, which makes heavy demands on the individual, and more on contraception and abortion, which do not. They dropped infanticide altogether and, in the later stages, tended to reduce abortion. In other words, they have undertaken to lower fertility, not primarily by extending further the negative effect of the variables by which fertility was lowered in the pre-industrial stage, but by using readily available institutional mechanisms with respect to marriage and by employing the possibilities of their advanced technology for conception control. Marital postponement was easily extended in the early and middle stages of industrialization because the basis for it already existed in Western society and because contraception and relatively safe abortion freed those who married late from the necessity of premarital celibacy. Gradually, in the late stages of industrial development, contraception has gained such predominance that it has made low fertility-values on the other variables (including abortion and late marriage) unnecessary.

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ON SOME INDICATIONS OF STABILITY IN THE GROWTH OF CITIES IN THE UNITED STATES[1]

This article describes some aspects of the growth of population in the United States through a study of the growth of its cities, that is, its urban places. In this discussion, the nation's population, as it is spread out in space, is looked upon as a density system.[2] One aspect of the growth of the density system is revealed by observing the growth in size of the population density peaks that form the cities. The total population may be described as a system with parts made up of cities together with the rural populations oriented to them.[3] A city does not develop independently of this system of which it is a part. Indeed, the growth of a city reflects complementary changes in the entire population system. Thus, the study of the development of a system of cities encompasses not merely the development of the urban population; rather, it includes the growth of the entire population system, which is being observed by noting alterations in its density peaks. In the same manner, one aspect of the growth of the highway traffic system may be studied by observing changes in size of traffic density peaks, or an aspect of the growth of a communication system, by measuring changes in the numbers of telephones in places having switchboards with more than a given number of connections.

Herein, the data on the growth of cities are presented as a succession of frequency distributions. Let us consider a single time series giving the growth of the total population. The series shows the fluctuation of a quantity that represents one aspect of the development of the population density system. But suppose this quantity be interpreted as an average of the growth tendencies of the component parts of the total population. Then it would be clear that the quantity suppresses information about the parts of the total. In this study the parts of the system under consideration are the peak densities or urban places. The arithmetic mean size of urban place and the percentage rate of growth of the urban population are interpreted as averages. They are averages of the respective sizes and growth rates of the parts comprising the total urban population, that is, of the urban places comprising that total. But an average is a parameter of a frequency distribution. Thus the time series giving the average size and that giving the percentage rate of change of the total urban population may be considered as two series of parameters of frequency distributions. One of these is the frequency distribution of the sizes of the component places, and the other is the frequency distribution of the percentage rates of change in size of the component places making up that total.

This inquiry investigates the form and parameters of these distributions and traces some of the variation that occurs among the cities within them.

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(1) Part of a study sponsored by the Bureau of Population and Economic Research, University of Virginia. Grateful acknowledgment is made for the generous assistance and encouragement of Dr. Lorin A. Thompson, Director.

(2) R. Vining, "A Description of Certain Spatial Aspects of an Economic System", Economic Development and Cultural Change, Vol. III, No. 2, pp. 147-195.

(3) Walter Christaller, Die Zentralen Orte in Suddeutschland, Jena, 1933, translated by Carlisle Baskin, University of Virginia.

The form of the distributions over the 160 year period covered by the data appears to be stable. Also, it appears that characteristic changes occur in the positions of individual cities and groups of cities within the arrays formed by the distributions. The apparent evidence of stability in the growth of cities poses a broad hypothesis concerning the nature of city growth.

In general, the procedure used here is an adaptation of one devised by Arthur F. Burns in his classic study of production trends in the United States.[4] Burns arranged his data to show the great divergence in the growth of different parts of an economic system. He investigated the growth, not of aggregate production, but of the many industries of the production system viewed as interdependent parts. He arranged the data by decades for 104 industries covering an estimated two-fifths of the country's output, and he presented the growth tendencies of these several industries as a frequency distribution of rates. By this method he was able to portray vividly the stresses and strains in a growing economy. At any point in time, industries are being born and other industries are dying, and there is a wide range of rates of growth. Yet Burns was also able to demonstrate, amid this divergence, evidence of stability in terms of the form and parameters of the distribution of growth rates and in terms of characteristic shifts in position within the array of different industries making up the distribution.

Just as Burns looked upon the economy as a system of industries, this study considers it a system of cities. Burns studied the growth of aggregate production in the economy by analyzing the frequency distributions of the growth rates of the component industries. Likewise, this study investigates the growth of population in the United States by analyzing a succession of frequency distributions of the sizes of cities representing the peaks of the population density system and the rates of growth of these cities.

II

The U.S. Census of Population: 1950[5] gives the distribution of the number of urban places of different sizes for each decade since 1790, where size of urban place refers to the population living within the incorporated limits of a place.[6] Figure 1 represents a convenient way to picture the distribution. On the vertical axis are measured the logarithms of size; on the horizontal axis are measured the logarithms of the cumulated number of cities. Any point on the diagram represents a cumulated number of cities with populations greater than a corresponding size. Each diagonal line on the chart represents the distribution of the number of places of different sizes in a particular census year. The

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(4) National Bureau of Economic Research, Production Trends in the United States Since 1870, New York, 1934.

(5) Vol. I, Number of Inhabitants, Table 5-b, pp. 1-6 to 1-7.

(6) To my knowledge this table gives the only data on the growth of cities comparable throughout the life of the nation. It is worth repeating that in this paper urban places are interpreted simply as population density peaks in a system of central places, that is, of cities and the rural population oriented to them. The paper does not deal with the problem of "realistic" or "appropriate" areal boundaries for cities. For a discussion of some difficulties of delimiting city boundaries, see D. F. Bogue, Population Growth in Standard Metropolitan Areas, 1900-1950, Washington, 1953, p. 2ff. Of course, this paper also abstracts from problems of annexation and detachment of area, but the resulting distortion of the growth of cities, it would seem, is minor in a study of this scope.

The heavy lines represent the changing ranks and sizes through the years of the places indicated.

A remarkable stability in these distributions is immediately apparent from an inspection of this diagram. Each year the distribution approximates a straight line of fairly constant slope, with intercepts that appear to have changed systematically with the increase in the total population. This statistical regularity may be summarized by a simple empirical mathematical rule called the rank-size rule. The rule may be stated thus:

$$S_R = \frac{A}{R^n} \quad \text{or} \quad S_R = AR^{-n} \qquad (1)$$

where A is approximately the size of the largest city in a given group of cities, R is the rank of a given city, and S_R is the size of the city of that rank. If n is one, then the size of a given city may be obtained by dividing the size of the largest city in the group by the rank of the given city, and this explains the name of the rule. If logarithms are taken of both sides in (1), then

$$\log S_R = \log A - n \log R \qquad (2)$$

which is a straight line on logarithmic paper with a negative slope of n.[7]

The rank-size rule, then, says that the size of a given city is not independent of the size of the largest city. And it says that the rank of a given city is not independent of the size of the largest city.

The apparent conformity of the number and size of cities to the rank-size rule during the period under study portrays vividly the sense in which the growth of the system of cities in the United States can be viewed in one of its aspects as having been accompanied by stabilities or regularities. At the same time, the evidence shows considerable moving about of the individual cities within

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(7) The rule was apparently first stated by Felix Auerbach in 1913 in the form of a definition of absolute concentration. See A. J. Lotka, Elements of Physical Biology, Baltimore, 1925, pp. 306-307. The first student to use the idea of determining the distribution of cities by size was apparently Ernest P. Goodrich in 1926 in an article entitled "The Statistical Relationship Between Population and the City Plan", The Urban Community, Ernest R. Burgess, ed., Chicago, 1926, pp. 144-150. H. W. Singer suggested the rank-size rule as an index of urbanization in an article called "The Curbe des Populations: A Parallel to Pareto's Law", The Economic Journal, Vol. XLVI, 1936, pp. 254-263. G. K. Zipf, in his Human Behavior and the Principle of Least Effort, Cambridge [Mass.], 1949, made wide application of the rank size rule to economic data, especially to the number of cities when ranked by their size for a number of countries. John Q. Stewart has also given examples of the application of the rank-size rule, as, for example, in his "A Basis for Social Physics", Impact, Vol. III, No. 2, p. 117. The two last named writers have applied the rule to cities and also to the following: business establishments ranked by the number of employees, retail stores by total sales, word-length by frequency of use, marriage announcements by distance of marriage from place of publication, bus trips by one-way length. I know of no theory leading to the expectation of the rank-size rule as the limiting distribution of an economic or demographic variable.

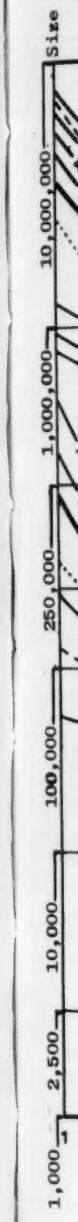
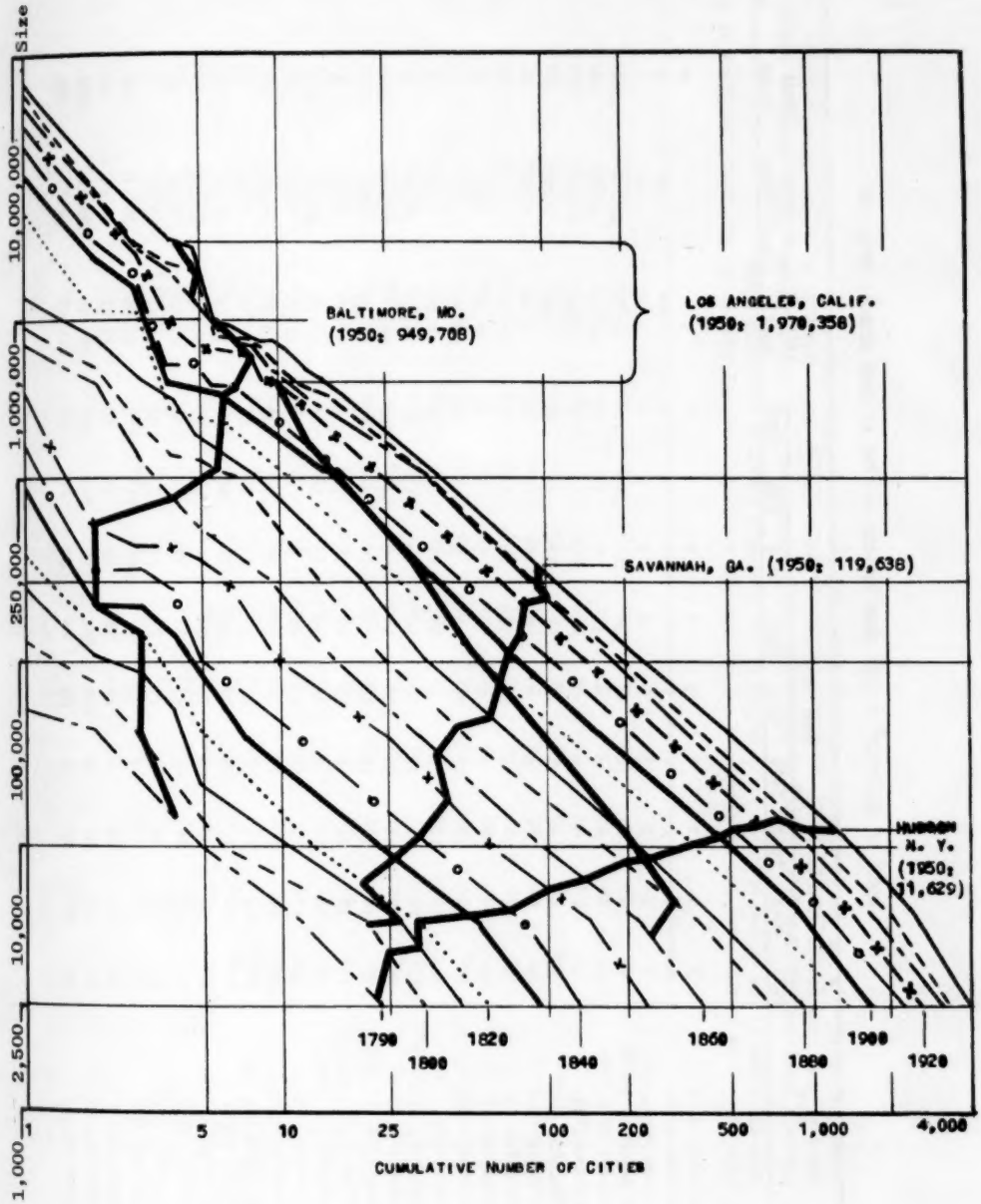


Figure 1. Change in Rank of Four Selected Cities in Ranking of Cumulative Number of Places by Size, U. S., 1790-1950



RANK[1] OF SELECTED[2] CITIES OVER 100,000 IN 1950 AT EACH CENSUS, 1870–1950

CITY	RANK IN									AVERAGE RANK	AVERAGE DEVIATION	RANGE OF RANKS	NET GAIN OR LOSS (–) DURING PERIOD
	1950	1940	1930	1920	1910	1900	1890	1880	1870				
NEW YORK, N. Y.	1	1	1	1	1	1	1	1	1	1	0	0	0
CHICAGO, ILL.	2	2	2	2	2	2	2	4	5	2.55	.86	3	3
PHILADELPHIA, PA.	3	3	3	3	3	3	3	2	2	2.78	.34	1	-1
LOS ANGELES, CALIF.	4	5	5	10	17	36	56	200	318	72.33	82.96	314	314
DETROIT, MICH.	5	4	4	4	9	13	15	19	19	10.00	5.33	14	13
BALTIMORE, MD.	6	7	8	8	7	6	7	7	6	6.89	.59	2	0
CLEVELAND, OHIO	7	6	6	5	6	7	10	12	15	8.22	2.74	10	8
ST. LOUIS, MO.	8	8	7	6	4	4	5	6	4	5.78	1.36	4	-4
WASHINGTON, D. C.	9	11	14	14	16	15	14	11	12	12.89	1.90	7	3
BOSTON, MASS.	10	9	9	7	5	5	6	5	7	7.00	1.55	5	-3
SAN FRANCISCO, CALIF.	11	12	11	12	11	9	8	9	10	10.33	1.19	4	-1
PITTSBURGH, PA.	12	10	10	9	8	11	13	13	16	11.33	1.93	8	4
MILWAUKEE, WISC.	13	13	12	13	12	14	16	19	19	14.55	2.29	7	6
HOUSTON, TEX.	14	21	26	45	66	94	118	127	180	76.78	47.09	166	166
BUFFALO, N. Y.	15	14	13	11	10	8	11	14	11	11.89	1.88	7	-4
NEW ORLEANS, LA.	16	15	16	17	15	12	12	10	9	13.55	2.49	8	-7
MINNEAPOLIS, MINN.	17	16	15	18	18	19	18	38	138	33.00	24.44	123	121
CINCINNATI, OHIO	18	17	17	16	13	10	9	8	8	12.89	3.62	10	-10
KANSAS CITY, MO.	20	19	19	19	20	22	24	30	38	23.44	4.81	19	18
INDIANAPOLIS, IND.	23	20	21	21	22	21	27	24	27	22.89	2.10	7	4
DENVER, COLO.	24	24	29	25	27	25	26	50	400	70.00	73.33	376	376
SAN ANTONIO, TEX.	25	36	38	41	73	74	81	98	125	65.67	27.26	100	100
MEMPHIS, TENN.	26	32	36	40	37	37	43	56	32	37.67	5.78	30	6
COLUMBUS, OHIO	28	26	28	28	29	28	30	33	42	30.22	3.23	16	14
PORTLAND, ORE.	29	27	25	24	28	42	65	117	210	63.00	45.11	186	181
LOUISVILLE, KY.	30	25	24	29	24	18	20	16	14	22.22	4.64	16	-16
SAN DIEGO, CALIF	31	43	63	98	137	232	207	910	700	269.00	238.22	879	669
ROCHESTER, N. Y.	32	23	22	23	25	24	22	22	22	23.89	2.07	10	-10

ATLANTA, GA.	33	28	32	33	31	43	42	49	62	39.22	8.69	34	29
ST. PAUL, MINN.	35	33	31	30	26	23	23	45	69	35.00	9.78	46	34
TOLEDO, OHIO	36	34	27	26	30	26	33	35	40	31.89	4.12	14	4
AKRON, OHIO	39	38	35	32	77	92	115	90	167	76.11	35.65	135	128
OMAHA, NEBR.	40	39	39	34	41	35	21	62	92	44.78	14.32	71	52
PROVIDENCE, R. I.	43	37	37	27	23	20	25	20	21	28.11	7.26	23	-22
DAYTON, OHIO	44	40	41	43	43	45	45	47	44	43.55	1.61	7	0
RICHMOND, VA.	46	45	44	38	39	46	34	25	24	37.89	6.81	22	-22
SYRACUSE, N. Y.	47	41	40	37	34	30	31	32	29	35.67	4.96	18	-18
NORFOLK, VA.	48	60	73	57	80	81	97	91	73	73.33	12.48	49	25
JACKSONVILLE, FLA.	49	47	74	75	96	137	195	300	255	136.44	75.83	253	206
WORCESTER, MASS.	50	44	42	35	33	29	32	28	30	35.89	6.30	31	-20
SALT LAKE CITY, UTAH	52	57	67	63	55	73	67	99	122	72.78	16.81	70	70
DES MOINES, IOWA	53	55	65	53	60	62	58	88	130	69.33	17.63	77	77
HARTFORD, CONN.	54	51	47	46	51	49	60	43	34	48.33	5.19	26	-20
GRAND RAPIDS, MICH.	55	52	46	48	44	44	47	59	89	53.78	9.26	45	34
NASHVILLE, TENN.	56	50	61	64	45	47	38	40	53	50.44	7.16	18	-3
YOUNGSTOWN, OHIO	57	49	45	50	65	93	92	140	125	79.55	29.28	95	68
NEW HAVEN, CONN.	59	54	49	39	35	31	35	26	25	39.22	9.85	33	-82
FLINT, MICH.	60	56	50	74	145	388	360	270	350	194.78	130.86	336	290
SPRINGFIELD, MASS.	61	58	62	52	57	63	66	57	51	58.55	3.95	15	-10
BRIDGEPORT, CONN.	63	59	64	44	49	54	70	70	75	60.89	8.35	31	12

1 WHEN IN EARLIER CENSUS YEARS THE RANKS OF SOME CITIES WERE NOT AVAILABLE DIRECTLY FROM SOURCE MATERIAL, THE RANKS OF THESE CITIES WERE ESTIMATED BY USE OF THE OBSERVED DISTRIBUTION OF THE RANK-SIZE RELATION FOR THOSE YEARS.

2 THE DATA WERE COMPILED FROM U. S. CENSUS OF POPULATION: 1950 (WASHINGTON, U. S. CENSUS BUREAU, 1952), VOLUME I, NUMBER OF INHABITANTS, TABLE 23, AND FROM STATISTICAL ATLAS OF THE UNITED STATES: ELEVENTH CENSUS (WASHINGTON: U. S. CENSUS BUREAU, 1898), TABLE 23. THEY REPRESENT CITIES OVER 100,000 IN 1950 THAT EXISTED THROUGHOUT THE PERIOD 1870–1950.

the array of cities ranked by their size. In Figure 1 the cities of Los Angeles, California; Baltimore, Maryland; Savannah, Georgia; and Hudson, New York were chosen to illustrate different types of fluctuation that have occurred. Los Angeles entered the distribution in 1860 with a rank of approximately 160. Each year after 1870 it gained rank until, by 1950, it ranked fourth. Baltimore, by way of contrast, has maintained its position among the top ten cities from 1790 to the present. Early in the period Savannah and Hudson both entered the distribution at its lower end. While Savannah moved from rank 21 to rank 100 by 1950, Hudson moved from rank 24 to somewhere around rank 1350. The course of these cities illustrates that within the regularity approximately described by the rank-size rule, considerable fluctuation has occurred among the ranks of individual cities.

Table 1 gives measures of the degree of variability of the rankings of 50 cities 100,000 or larger in 1950 that were reported by the Census throughout the period 1870 to 1950.[8] These measures are the average rank, the average deviation of the ranks, and the range. The first measure states the average position of each city among the cities in the country 2,500 or larger; it is the average of the relative change of position of these cities. The second measure states the degree of consistency of a city's position. The third gives the number of positions over which the city's rank has varied.

Even without very detailed study this table reveals significant facts about the growth of these cities, among the nation's cities 100,000 and larger in 1950. The cities seem to fall into three classes according to their range of variation of rank: 14 cities show relative stability of rank, varying less than 10 positions; 10 show extreme variation of 100 positions or more; the remaining 22 shifted rank from 10 to 100 positions. Of the fifty cities, 30 experienced a net gain in rank between the end decades of the period, 17 suffered a net loss, and three experienced no net change. It is apparent from the table that among the fifty cities, those located in the Northeast have lost in rank at the expense of cities located in other parts of the country.

We may summarize the study so far as follows. The increasing concentration of the population of the United States has led to the increase in the size and number of cities. The manner in which this growth of cities has occurred over the life of the nation has shown a remarkable stability that apparently may by summarized approximately by a simple empirical mathematical rule. At the same time, the individual cities within the array of cities ran

time, the evidence shows considerable moving about on the part of individual cities within the array of cities ranked by their size. Regularity in the growth of the group of urban places appears to exist side by side with individual freedom of particular cities to move about over fairly wide ranges within the rankage.

The changes in rank by size of the different large cities of the nation presumably reflect the changing roles played by these cities in the population system; that is, they reflect the changing shares of the total urban economic activity obtained by these cities at various decades. It would seem that generally speaking, a city has no monopoly upon its position within the array. (In fact, it is well known that during the nineteenth century in the United States, many cities have come and gone as leading centers of activity; and since 1870, only one city, New York, has maintained the same ranking.) Yet at the same time, certain cities, all of them relatively high-ranking centers of activity among the large cities, show remarkable stability of rank during the period. These findings suggest further study of the role within the population system of cities displaying different rank-size characteristics.

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(8) These cities are not representative of all 106 cities over 100,000 in 1950, but of such cities whose ranks among the nation's largest cities were ascertainable during each decade, 1870-1950.

Figure 2.

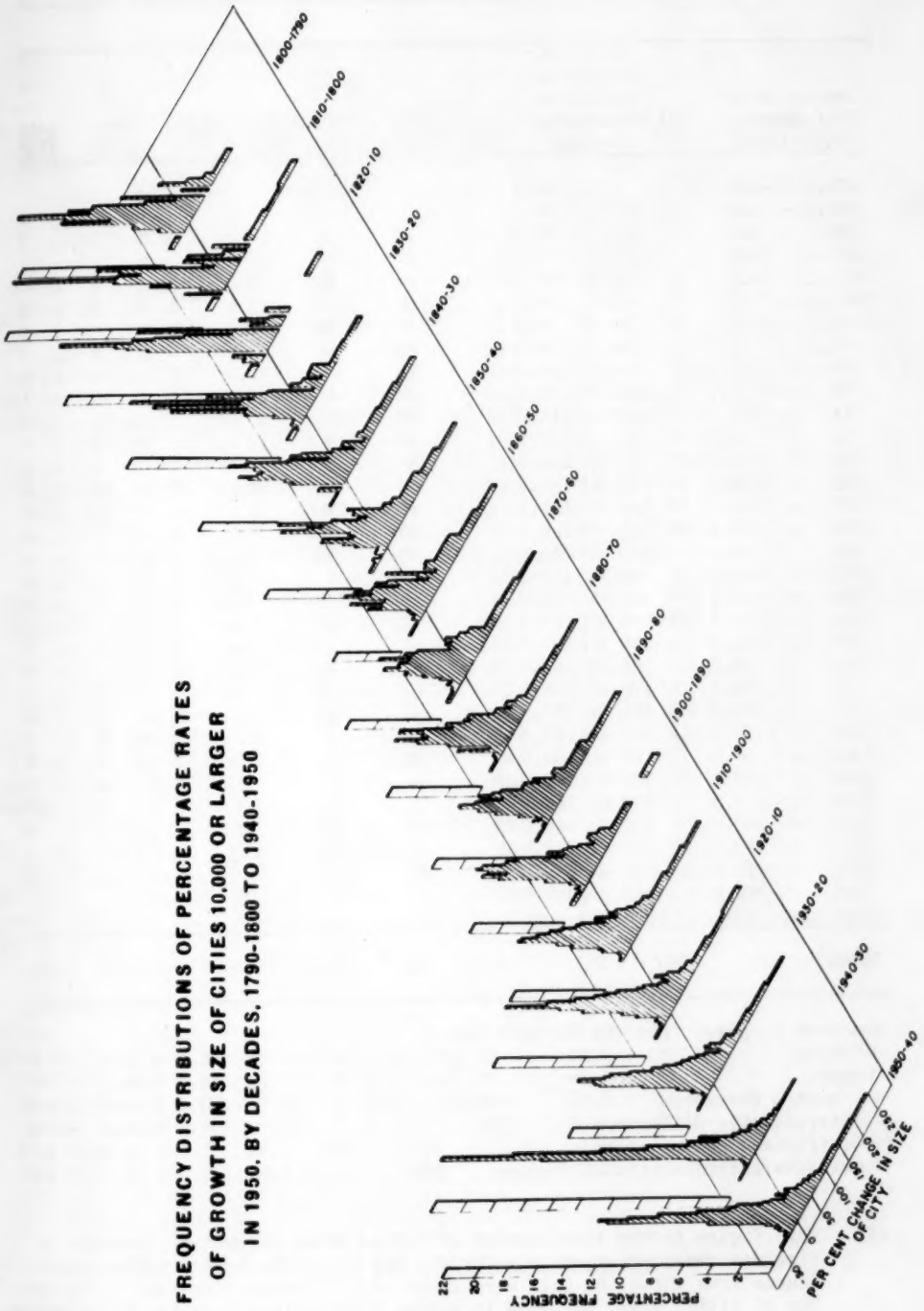

FREQUENCY DISTRIBUTIONS OF PERCENTAGE RATES
OF GROWTH IN SIZE OF CITIES 10,000 OR LARGER
IN 1950, BY DECADES, 1790-1800 TO 1940-1950
1800-1790
1810-1800
1820-10
1830-20
1840-30
1850-40
1860-50
1870-60
1880-70
1890-80
1900-1890
1910-1900
1920-10
1930-20
1940-30
1950-40
PERCENTAGE FREQUENCY
22
20
18
16
14
12
10
8
6
4
2
0
PER CENT CHANGE IN SIZE OF CITY
-40%
0
40%
80%
120%
160%
200%
240%

Table 2. Frequency Distribution of the Number of Places Over 10,000 in

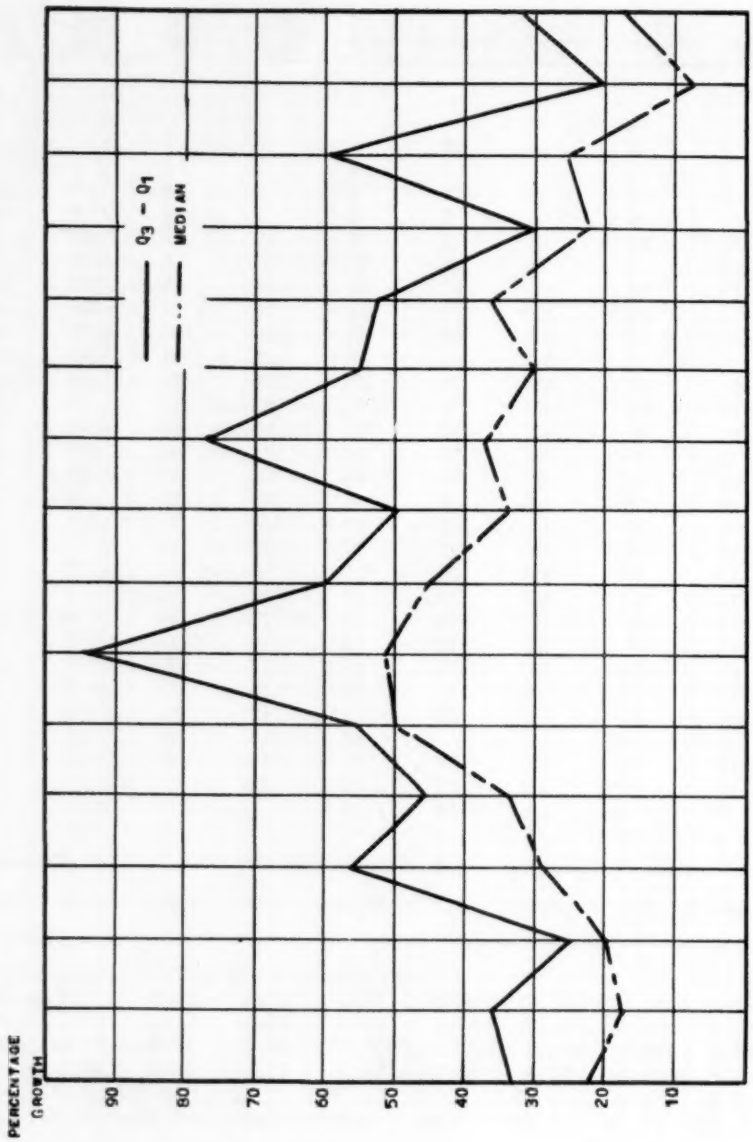
Decade Rates of Growth (Per Cent)	Rates of Growth as Ratios of Preceding Decade	1800/1790	1810/1800	1820/1810	1830/1820	1840/1830	1850/1840
-75.1 - -100	0 - 24.9						
-50.1 - -75	25 - 49.9					1	1
-25.1 - -50	50 - 74.9	1	2	3	3		2
-20.1 - -25	75 - 79.9						1
-15.1 - -20	80 - 84.9		2	1	1	2	
-10.1 - -15	85 - 89.9	1		1	1	2	1
-5.1 - -10	90 - 94.9	2	1	2	1		1
-0.1 - -5	95 - 99.9	2	4		3	5	1
0 - 4.9	100 - 104.9	5	3	8	5	6	4
5 - 9.9	105 - 109.9	3	6	9	11	10	6
10 - 14.9	110 - 114.9	5	11	10	5	11	9
15 - 19.9	115 - 119.9	7	6	14	13	8	9
20 - 24.9	120 - 124.9	4	5	9	6	9	5
25 - 29.9	125 - 129.9	5	6	8	15	10	6
30 - 34.9	130 - 134.9	4	7	6	6	13	15
35 - 39.9	135 - 139.9	2	1	2	5	11	12
40 - 44.9	140 - 144.9	2	2	8	9	7	10
45 - 49.9	145 - 149.9	1	3		4	3	16
50 - 54.9	150 - 154.9	3		2	1	7	9
55 - 59.9	155 - 159.9		3	1	1	6	6
60 - 64.9	160 - 164.9		1	3	3	3	5
65 - 69.9	165 - 169.9	1	1	1	2	1	7
70 - 74.9	170 - 174.9				2	2	7
75 - 79.9	175 - 179.9	2	2		1	2	8
80 - 89.9	180 - 189.9	2		3	3	1	6
90 - 99.9	190 - 199.9	1	1		3	3	5
100 - 149.9	200 - 249.9	2	3		8	10	19
150 - 199.9	250 - 299.9		1	2	6	6	11
200 - 249.9	300 - 349.9		3			4	4
250 - 499.9	350 - 599.9		2	1	1	5	4
500 - 749.9	600 - 849.9						2
750 - 999.9	850 - 1099.9						
1000 and over	1100 and over						1
Total[1]		55	76	94	119	148	193
Measures Computed from the Distributions:							
Median		21.9	17.5	19.6	28.5	33.8	49.2
Mean		28.8	45.2	29.3	44.4	58.6	79.1
Standard Deviation		31.9	75.1	48.0	55.8	78.9	113.7
Interquartile Difference		33.6	36.2	24.9	56.3	45.0	55.5
Coefficient of Variation		1.11	1.66	1.64	1.25	1.35	1.44
Relative Interquartile Difference		1.53	2.07	1.24	1.49	1.33	1.13

(1) This figure is the total number of cities whose percentage increase in size was reported separately for the decade in the source tables of the Census from which the data were compiled. In every case this is the number of cities which was used in making calculations from the distribution.

1950 by Percentage Rate of Growth of Population by Decades, 1790-1950.

1860/1850	1870/1860	1880/1870	1890/1880	1900/1890	1910/1900	1920/1910	1930/1920	1940/1930	1950/1940
	1								
1	2	1							
2	9	5	2	10		3	5		1
	3	2		1	2	2	1	1	1
2	3	4	2	6	4	7	5	4	8
2	5	4	1	5	5	7	14	6	12
3	4	21	7	11	17	25	27	54	22
4	8	7	6	28	21	36	58	176	71
14	14	26	19	57	39	68	93	262	157
11	21	41	31	70	54	87	97	203	164
18	20	52	41	55	81	128	109	130	139
11	29	36	54	68	80	101	91	93	116
17	24	41	55	75	71	101	89	64	88
21	25	52	45	74	71	82	74	36	61
15	22	41	43	58	63	66	57	51	57
19	32	30	33	58	56	56	49	26	38
16	22	33	45	50	48	51	40	23	31
10	24	25	39	25	46	35	35	13	22
16	21	22	36	35	29	34	33	16	28
13	11	24	26	27	37	23	27	12	21
4	12	24	31	26	21	16	19	10	23
6	13	13	25	19	29	20	10	4	14
14	12	13	17	10	26	27	24	4	17
2	14	7	22	12	18	18	19	1	11
11	21	24	22	32	26	23	25	6	17
13	17	13	27	21	25	16	25	3	14
45	37	41	71	43	62	43	66	9	41
17	28	18	29		43	14	29	5	27
9	11	11	29	23	23	16	20	3	8
16	11	11	33	7	28	23	26	3	13
4	5	3	10	18	8	1	10	1	1
3	3	3	4	1	4	1	2		2
2	4	2	5	2	3	2	7	1	
341	488	650	810	927	1040	1132	1186	1220	1225
51.4	45.0	34.02	47.6	30.3	36.0	22.5	25.2	7.6	16.6
99.1	83.7	60.4	91.2	57.1	69.9	46.0	61.7	15.7	34.5
162.4	153.5	135.5	150.7	112.1	124.5	83.8	95.2	59.6	71.8
94.4	60.8	49.3	77.3	54.6	52.7	29.6	59.7	20.5	27.7
1.64	1.83	2.24	1.95	1.96	1.78	1.82	1.54	3.80	2.08
1.84	1.35	1.45	1.62	1.80	1.46	1.31	1.98	2.70	1.69

Source: Compiled from U. S. Census of Population: 1950, Washington, 1952, Vol. I, Ch. 1-49, Table 4.


$Q_3 - Q_1$
MEDIAN
PERCENTAGE GROWTH
90
80
70
60
50
40
30
20
10

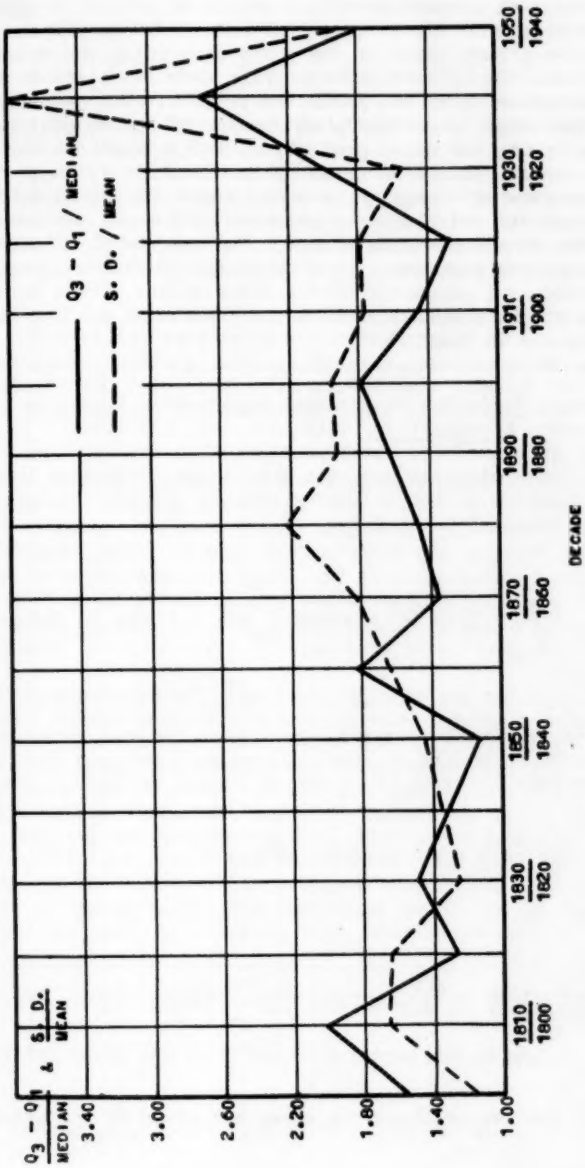


Figure 3. Variability in Rates of Growth of Cities, 1790-1950, as Measured by Interquartile Differences and Coefficient of Variation

III

Now let us turn to a study of the growth rates of cities. In this discussion, percentage rate of growth of cities by decades is chosen for observation because it allows direct comparison of the growth of cities of different sizes. The percentage growth of the total (rural and urban) population is an average of the respective growth rates of the parts comprising the total, however the parts be defined. It is a weighted average with the sizes of the component parts at the beginning of the period as weights. The percentage growth of the urban population is similarly an average of the respective growth rates of the parts comprising the urban population, and we may consider these parts as being the places classified as urban by the Census. If there is no correlation between the rate of change of an urban place and its size, the percentage rate of change of the total urban population will equal the unweighted mean of the rates of the component urban places. The mean being a parameter of a frequency distribution, the percentage rate of change of the total urban population may be interpreted as a parameter of the distribution of the percentage rates of change of the places comprising the urban population so long as the correlation mentioned above is small.[9]

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(9) R. Vining, "Regional Variation in Cyclical Fluctuation Viewed as a Frequency Distribution", Econometrica, July 1945, pp. 187-188.

Let the rate of growth of the total population be $\Delta U/U$, where U is the urban population for a given period, and ΔU is the difference between U and the urban population of the following period. Denote the rate of growth of the jth urban place by $\frac{\Delta U_j}{U_j}$

Then $\frac{1}{\sum_1^n U_j} \sum_1^n \frac{\Delta U_j}{U_j} \cdot U_j = \frac{\Delta U}{U}$, since $\sum_1^n U_j = U$ and $\sum_1^n \Delta U_j = \Delta U$.

The proposition is that this weighted mean equals the unweighted mean of the percentage rates of change of urban places when the correlation coefficient between size and rate of growth of a city is small. Let

$K = \frac{1}{n} \sum_1^n \frac{\Delta U_j}{U_j}$ represent the unweighted mean and

$K' = \frac{1}{\sum_1^n U_j} \sum_1^n \frac{\Delta U_j}{U_j} \cdot U_j = \frac{\Delta U}{U}$ represent the weighted mean. The conditions under which the two means may be equal are given by the relation

$K' = K + r \frac{\sigma_{\frac{\Delta U_j}{U_j}}}{} \frac{\sigma_{U_j}}{\bar{U}}$, where σ_{U_j} and $\bar{U}$ are the standard deviation and the mean respectively of the sizes of urban places and where $\sigma_{\frac{\Delta U_j}{U_j}}$ is the standard deviation of the rates of growth of the prospective urban places.

The next question in such an inquiry is that of the shapes of the frequency distributions. The growth rates of the urban places, in the sense of places 2,500 or more in size, are not available for study. However, the interpretation above does not rest for its validity upon the definition of the term urban place. Herein, as a matter of convenience, the term is arbitrarily defined as "places with populations 10,000 or more in size in 1950".

In short, this study observes the growth tendencies of the cities (urban places) in the United States with 10,000 or more inhabitants in 1950. These cities are the parts into which their aggregate population may be divided. The growth rate of their aggregate population may be interpreted as a series of parameters of the distributions of the growth rates of its parts. But in addition, these urban places are viewed as population concentrations within a population density system. As such, these cities are looked upon as representing the parts into which the total population may be divided, namely, the sub-systems of central places of various sizes and their respective oriented populations.

Table 2 and Figure 2 show the frequency distributions of the decade percentage rates of increase in size for the cities 10,000 or over in size in 1950. In the table the numbers listed under any decade are the numbers of these cities having the growth rates indicated at the left side of the table. The totals differ each year because the number of these cities reported in the Census increased each year.

Some general features of these distributions are clear to the eye. They are of course skewed to the right. The variation in their rates is extreme, in ten of the sixteen periods under study ranging from negative values to rates over 1,000 per cent. In each decade there are among these "successful" cities a proportion that failed to grow, and in each decade there are cities that are growing with great rapidity. It would seem to be significant that, over the entire period of rapid growth almost unique in world history, some places which later reached 10,000 or more in size have been 'stagnant'.

It is also apparent that few cities in any one decade grow at the 'average' rate. Most cities grow at a rate that varies more or less from the average, some growing a great deal faster than average, others growing far less, and some actually declining. To measure the movement of the cities within the distributions of their growth rates, or the absolute variability of the rates of growth, the interquartile difference and the standard deviation were employed. Relative variability was measured by the relative interquartile difference and the coefficient of variation. The information they reveal about the distributions is summarized by Figure 3. This figure shows that the absolute variability of the rates of change falls into two stages as do the average and median rates of growth. Marking the dividing line, the decade ending in 1860 produced the

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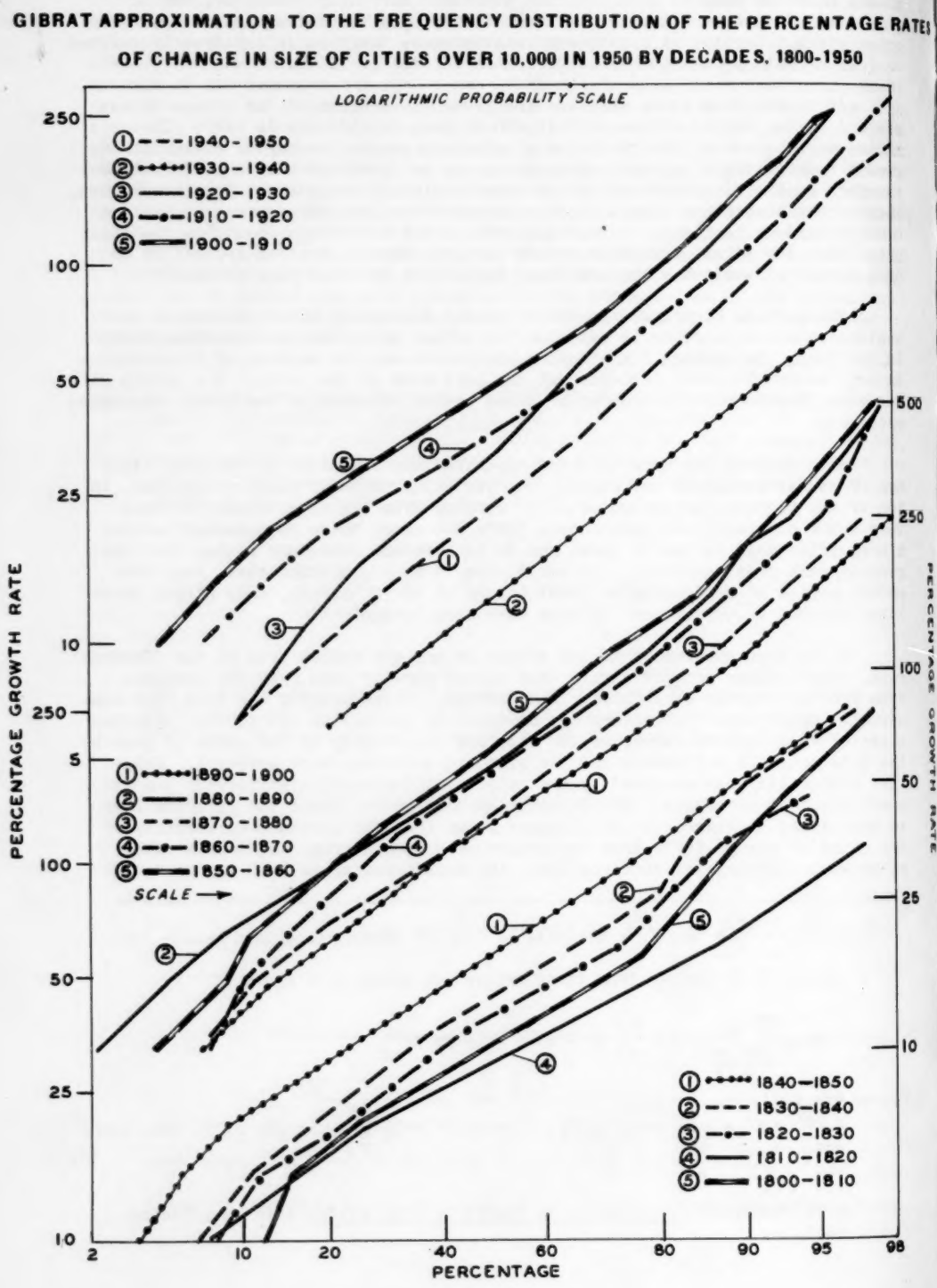
Let $X_j = \frac{\Delta U_j}{U_j}$ and U_j = the size of the jth urban place, and denote deviations of X_j and U_j from their respective means as x and u.

Then $\frac{\sum xu}{n\sigma_X\sigma_U} = r$, $\sum XU - n\bar{X}\bar{U} = nr\sigma_X\sigma_U$,

$\frac{\sum XU}{\sum U} = K' = \frac{n\bar{X}\bar{U}}{\sum U} + \frac{nr\sigma_X\sigma_U}{\sum U}$, $K' = K + r\sigma_X\frac{\sigma_U}{\bar{U}}$, as per G. U. Yule and M. G. Kendall, Introduction to Theory of Statistics, 11th ed., London, 1937.

Figure 4.


GIBRAT APPROXIMATION TO THE FREQUENCY DISTRIBUTION OF THE PERCENTAGE RATES
OF CHANGE IN SIZE OF CITIES OVER 10,000 IN 1950 BY DECADES, 1800-1950
LOGARITHMIC PROBABILITY SCALE
PERCENTAGE GROWTH RATE
PERCENTAGE
1 1940-1950
2 1930-1940
3 1920-1930
4 1910-1920
5 1900-1910
1 1890-1900
2 1880-1890
3 1870-1880
4 1860-1870
5 1850-1860
SCALE
1 1840-1850
2 1830-1840
3 1820-1830
4 1810-1820
5 1800-1810
250
100
50
25
10
5
2
10
20
40
60
80
90
95
98
500

largest variability along with the highest median rate of growth. In fact, usually the direction of movement of the median growth rate is the same as that of the interquartile difference, and in all decades the direction of movement of mean and standard deviation is the same. Decades of increased 'average' growth rates are typically decades of increased absolute variability of rates. The question is raised whether the variability measured relative to the level of growth is the same in different years. In other words, is the larger absolute value of the interquartile difference the result of the same degree of fluctuation about a higher level of growth? The variation in the relative interquartile difference and the coefficient of variation in Figure 4 suggest a negative answer to this question. For example, in six instances during the fifteen periods the signs of first differences in the interquartile difference, the median, and the relative interquartile difference are the same. In these instances at least, changes in relative variability and in level of growth went hand in hand. Yet, though there are differences in relative variability of the rates in different years, there is a high correlation between the values of the measures of level and dispersion of growth rates, the correlation coefficient between the mean and standard deviation being .91. This correlation suggests that there has been a degree of stability about these distributions despite the extreme variability in the rates of growth.

To illustrate the phrase "degree of stability" as applied to the distributions of the growth rates of cities, an attempt has been made to fit a type of logarithmic normal distribution to the observed data. The results of fitting the Gibrat formula are shown in Figure 4. The idea involved in this formula is that some distributions which are skewed to the right may be approximated by the normal distribution if a new argument is found which is a linear function of the logarithms of the original variable.[10] In this instance, logarithmic normal probability paper is used to plot the distributions. Its cumulative percentage scale is arranged so that a variable in fact logarithmically normally distributed will form a straight line when plotted against the less than cumulative frequency. The fits shown were obtained by adding a constant to each percentage change before taking the logarithm. The purpose of adding the constant was to make the signs of percentage changes positive. The value of this empirically determined parameter yielding the best fit by eye was 10 for all decades up to 1920-1930; from that decade through 1940-1950 it was six. In plotting the frequencies, in any one decade at most 3.2 per cent of the cities under study were omitted from consideration, and this percentage, comprising three places, occurred in 1810-1820.

In view of the rapidity of growth in this country of the total population and the total urban population, and considering the changes in the distribution of the population over the total land area during the last 16 decades, the apparent evidence of stability in the distribution of the growth rates of cities would appear to be of some interest for the development of analyses of the process of population growth and its spread over the land.

III

There exist, to my knowledge, no hypothetical "models" analyzing the process by which an economy develops under assumed conditions, that would lead to the expectation, as limiting distributions, of Pareto or logarithmic normal distributions. There is no basis to say that stability in the growth of cities has been "demonstrated" by the evidence shown in this paper. Indeed, to my knowledge no criteria exist by which to judge the question. The appearance to the eye of a reasonably close "fit" simply raises the possibility of developing

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(10) René Gibrat, Les inégalités économiques, Paris, 1931.

theories to permit a test of the hypothesis of stability in city growth.[11] An analysis of economic development under assumed conditions would reveal something, for example, about the amount of variation to be expected in the sizes and growth rates of the cities. Such an analysis would provide some standard by which to judge the observed differences in size and growth rate of cities that have occurred within the system.

Second, the study suggests, for a possible model of city growth, the use of some general statements as assumed conditions.[12] For example, judging from the evidence in this study, failure to grow in any one decade is apparently no indication of "stagnation" of a city but is a typical feature of its growth, and it occurs within the system with a definite frequency. This fact suggests, for an assumed condition of the model, a statement to the effect that during a given time period a given city may grow or decline. This assumption, together with the other assumptions of the model should, however, imply that during each time period there exists within the distribution of growth rates a probability of negative ones; in other words, in the limiting distributions of the model a certain proportion of cities within the distribution of growth rates might be expected, under the assumed conditions of the model, to show negative growth rates. Another example of such a general statement is one to the effect that population concentrations of certain amounts are not independent within the system of concentrations of certain other amounts. By means of descriptive studies of modest scope, over time some general statements may be accumulated that together suggest definitions of the "essential" conditions to be assumed in creating a workable model of the development of a system of cities.

Finally, the techniques of observation in this study may be useful in suggesting features of city growth it would be interesting to study further. For example, what factors produce differences in the growth rates of individual cities within a system of cities as the system grows? How may these factors be observed? How is the location of a city within the land area related to its position within the distribution of growth rates? Is size of city related to its rate of growth? Is "age" of city? Is its distance from cities of various sizes? Is there a long-run tendency observable in the growth rates of individual cities? How is the internal composition of cities related to their position within the distribution? Answers to questions such as these should reveal some features of the structure of the system of central places and modifications of that structure through time in a progressive economy, that is, an economy experiencing increasing output per worker.

Carl H. Madden

Federal Reserve Bank of New York

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(11) The logarithmic normal distribution has found many uses. The distribution has been used, for example, to describe the threshold of sensation, the size of silver particles in a photographic emulsion, the sensitivity to drugs, the survival time of insects treated with disinfectants, the average size of the different species in each of various phylogenetic groups, the number of plankton caught in different hauls of a net, and the amount of electricity used in medium class homes. See Jack Moshman, "Critical Values of the Log Normal Distribution", Journal of the American Statistical Association, September 1953, pp. 600-605.

(12) See Vining, op. cit., for an illustrative discussion of some possible considerations for models of urban growth.

DATA ON THE STRUCTURE OF THE CHINESE CITY IN THE PRE-INDUSTRIAL PERIOD[1]

One of the many advances which have been made in the last thirty years in the field of Oriental studies is undoubtedly the application of principles of historiographical method to the historical source material preserved in Oriental civilizations. We have now for a number of civilizations a much more sober picture than even twenty years ago.

However, under the influence of the Western text-critical approach, which actually goes back to Thucydides,[2] our efforts have concentrated upon political history. This tendency has been strengthened by the character of the historical texts which are found in Oriental civilizations: they, too, concentrated on a description of the actions and political intentions of the rulers and other "great men".

Nobody today denies the profound importance of political action and the influence of great personalities upon the course of history; nobody, therefore, denies the value of political history; but it is significant that American historians recently have turned around to see whether they could not profit from other sciences, such as anthropology, psychology, sociology, or economics.[3] This shows clearly that they seek for a new meaning in history, away from traditional political history as it results from the application of the, by now, traditional historical method.[4] Orientalists, perhaps because of their rather recent acceptance of historical methods, still feel uneasy when they are faced with a social sciences approach[5] or when readers express that a purely political historical account leaves them unsatisfied. While Orientalists have successfully learned from history, they seem to be reluctant to ally themselves more closely with the social sciences, reluctant to learn from their methods, to pose new questions, and to adopt new points-of-view. I speak here, of course, only of the majority of Orientalists, not of a small number here and in other countries who have already made a start in this direction.

At a time at which German historiography under L. von Ranke's influence was striving for the impossible ideal of "objective" historiography, another great historian, Th. Mommsen wrote, "He who writes history...has to help those for whom he writes to find their future attitude towards the state and has to

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(1) Based on a paper read at the meeting of the Pacific Branch of the American Oriental Society, Seattle, April 23, 1955.

(2) See H. Strassburger, "Die Entdeckung der politischen Geschichte durch Tukydides", Saeculum, Vol. 5, No. 4, pp. 395-428.

(3) "The Social Sciences in Historical Study", Social Science Research Council Bulletin No. 64, New York, 1954, p. 23.

(4) A parallel development can be seen in Europe as a reaction against L. von Ranke's theories about history.

(5) And then quickly warn against an "overdosis" (cf. H. Franke, Sinologie, Bern, 1953, p. 112, and H. Lommel, Oriens, No. 2, 1954, p. 382).

direct them towards it."[6] Today, we would propose to add "towards the state and society." This daring statement means nothing less than that it is legitimate to tie in history with the problems of today, to ask of history questions which concern us today.

Let me give you an example of what I mean by this. We have come to believe that the industrial civilization in which we now live was essentially created by a "middle-class"[7] who lived in the cities of Europe. We believe that it is the city with its condensation of population, its greater division of labor, its mixed population that made it possible to create the first industries and the first great accumulations of capital which were necessary for an industrial society. This belief, based upon detailed historical research, has led to a number of questions important for today and for the future, such as: a) do all the so-called "underdeveloped" countries have to pass through an age of the city in order to become "modern" or is there another way? b) why have not other societies which developed cities developed into industrial societies? and, as a consequence of the first two questions, c) have all cities the same origin and the same functions? There is a great amount of research under way on all three questions. At least the last two questions are of a historical character, and yet, they have been outside the scope of traditional history. These two questions have been posed not by the historians but by the historically minded sociologist, in collaboration with the anthropologist and the economist. My paper will investigate the Chinese city with these questions in mind.

There seems to be no doubt that the historically earliest cities of the world originated in the so-called "fertile crescent", the area roughly circumscribed by the Taurus and Anti-Taurus mountains, Iraq, Syria, and Lebanon. Although not yet proved at all, it is possible to assume hypothetically that the cities of Asia Minor, Iran, Greece, and Rome, as well as Egyption cities, came into origin, either by direct contact or as marginal formations, as copies of cities of their neighbors. It is even possible, but also not at all proved, that the Indus valley civilization got the idea of the city through its trade connections with Mesopotamia. The cities of only two areas in the world cannot easily be connected, directly or indirectly, with the Mesopotamian city: the Chinese city and the cities of pre-Columbian Central and South America, assuming that these two American areas were not independent of each other. While the clarification of detail problems, such as whether or not the cities in the Mediterranean world are really interconnected, is of high interest and importance; for our general problem it seems to be preferable to select the Chinese or the pre-Columbian American city, because thus far no serious attempt has been made to derive these, too, from the Mesopotamian center. Thus, if we assume that we have here really independent developments, we are on safer ground for finding answers to our basic questions.

But if we turn to the material on the Chinese city, we are very much disappointed. Of course, our "Histories of China" mention hundreds of cities, especially government or provincial capitals, and the conquest of cities in war, but there is practically no research available for details; there are no ready answers for our problems. There were very few Chinese historians interested in such matters, although many dropped occasional remarks here and there; there was hardly any modern historian to ask: who lived in these Chinese cities? what did they do in these cities? what did cities look like? and how were they organized and administered?

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(6) As quoted in Saeculum, Vol. 4, No. 4, p. 428.

(7) Although in some cases the initiative has been in the hands of members of the nobility or aristocracy. See A. B. Hibbert, "The Origins of the Medieval Town Patriciate", Past and Present, 1953, No. 3, pp. 15-27.

Some twenty-five years ago, Li Chi made the hypothesis that the spread of Chinese civilization could be measured by studying and mapping the process of building new cities.[8] Nobody has seriously taken up his lead. More than ten years before, Max Weber made certain statements about the function of the Chinese city within a general theory of types of cities and their functions.[9] Until last year nobody had seriously evaluated this theory.[10] At approximately the same time Shigeru Kato tried to examine the main characteristics of the later Chinese city,[11] and only last year were his results incorporated into an article in a general series on the city,[12] but without an attempt to achieve an analysis of the Chinese city. Work done thus far has concentrated upon the medieval period and remained more or less limited to a collection of data. Sociologists, too, have done practically nothing[13] in the study of the Chinese city; they have specialized in village studies, as in this country in which they have studied "Middletowns" but have shied away from studying large metropoles. This neglect is astounding not only because of the omission to study the Chinese city as such, but particularly in view of the fact that there were centuries for which China must give the outsider the impression that the industrial age was immediately impending. I mean the Sung period, in which all the necessary conditions for capitalism and industry were developed and in which some promising steps toward industry were already visible. What prevented the Chinese from taking the next step? Judging from the relation between city and industry in Europe we can pose the hypothesis that this different development in China may have some relation to the structure of the Chinese city. To pose such questions "does not mean that the investigator has prejudged the issue; it does mean that he has brought his insights and 'hunches' out into the open and reduced them to empirically testable propositions."[14]

II

The origin of the Chinese city is still unknown. We know for certain that the last capital of the Shang dynasty, near An-yang, was a city. We can, with a certain amount of safety, assume that their earlier capitals were cities, too. We have, however, no textual testimony or archeological data to determine

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(8) Chi Li, The Formation of the Chinese People, Cambridge, 1928.

(9) Max Weber, Wirtschaft und Gesellschaft, 3, Halbband, Tübingen, 1925, p. 414ff.

(10) R. Redfield, "The Cultural Role of Cities", Economic Development and Cultural Change, Vol. III, No. 1, pp. 53-73. See also R. Murphey, "The City as a Center of Change; Western Europe and China", Annals of the Association of American Geographers, Vol. 44, 1954, pp. 349-362; and G. Sjoberg, "The Preindustrial City", American Journal of Sociology, Vol. LX, No. 5, pp. 438-445. The textbook by Rose Hum Lee, The City, Chicago, 1955, is the first to include chapters on non-western cities, but the presentation does not penetrate deeply into general problems.

(11) Sh. Kato, Studies in Chinese Economic History, 2 vols., Tokyo, 1952-53 (in Japanese).

(12) E. Balazs, "Les villes chinoises", Recueils de la Société Jean Bodin, Vol. 6, 1954, pp. 225-240.

(13) Descriptions of cities like that of Shanghai by R. Murphey (Shanghai: Key to Modern China, Cambridge, 1953); or the book by H. M. Fried, Fabric of of Chinese Society, a Study of the Social Life of a Chinese County Seat, New York, 1953, stress aspects quite different from those we have in mind.

(14) "The Social Sciences in Historical Study", op. cit., p. 27.

the character of earlier settlements. If Hsia culture is to be equated with the painted pottery stage, then they seem to have lived in villages and not in cities; if we are justified in trusting and extrapolating texts concerning the Hsia, although all those texts were written more than a thousand years later, they may have had cities. At present I would favor the first possibility.[15]

Socio-anthropological research, too, does not lead much further in this case. Only one fact seems to be clear: the "local cultures", which became the "Chinese high culture",[16] did not have cities at all. Thus, we may say that the emergence of the Chinese city marked the birth of Chinese high culture.

This point implies that the city contained a non-uniform population, that it even came into existence in heterogeneously populated areas. This seems to agree completely with all we know of the earliest cities in other parts of the world. Secondly: the emergence of the city coincided with the formation of a state. The local cultures existing in the area before the formation of the Chinese high culture did not have a social organization which could be called a state, a term which implies the existence of a stratified society. The fusion of local cultures into a Chinese high culture led to stratification and at the same time to the formation of a state. The point unknown in this concept is: when exactly did all this take place?

Before An-yang has been totally excavated it will not be possible to get a full picture of the structure of the city of the Shang. We believe that it was walled, we know that it had a "palace-quarter" for the ruler and his "environment" and quarters for craftsmen close by. This means that a) the settlement was planned and was not the result of the natural growth of a village community; b) a ruling elite tried to set itself apart from the ruled and wanted protection against attacks from the outside; c) the inhabitants represented different social units, because we have strong reasons to assume that at that time craftsmen were organized in clans or similar units--quarters for craftsmen of different crafts would indicate settlement of clans of different origin; d) the settlement close to the palace would indicate a status of dependence of the artisans from the ruler. This is indicated by early texts, and we know from later periods, down to the Sung period, of the existence of palace-workshops and imperial workshops in the country, in which artisans in some state of dependence, which might perhaps be called "status of bondsmen", worked for the needs of the palace--we have many parallels from all parts of Asia of similar subordination of units of artisans under feudal or imperial rulers;[17] and e) the population

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(15) According to H. G. Creel, The Birth of China, p. 59, the settlement of the "Black Pottery Stage" at An-yang, which was pre-Shang, had a wall and thus may have been a city. The other excavated settlement of the Black Pottery group, Ch'eng-tse-yai, also had a wall. The Black Pottery stage is later than the flourishing period of the Painted Pottery stage, and slightly earlier than, but locally contemporaneous with, the Shang period.

(16) Details on this theory are in my Lokalkulturen im alten China, 2 vols., Leiden and Peking, 1943.

(17) Possible parallels are the ancient Japanese "be" and the similar Indian system of "traditional workers" (see McKim Marriott, Village India, Chicago, 1955, p. 56). But there has been almost no research on Chinese crafts and their organization in the pre-T'ang period, i.e., the period of the formation of real "guilds". It seems not to be impossible to assume that the guilds resulted from the government practice to force all craftsmen to register. They were told which types of products they should make (Law of 719, Noboru Niida, 唐令拾遺 , The Critical Study of Legal Documents of the T'ang and Sung Eras, Tokyo, 1937, p. 720); down to

of the city was not the original population of the next neighborhood but was brought into the city from different places. I admit that all these conclusions are hypothetical, but data from later periods would seem to confirm these assumptions.[18] The basic division of the city into two parts: palace/city (or, seat of feudal lord or bureaucratic administrator and quarters of the populace) remains typical for all later Chinese cities, just as the city wall remains typical. In fact, so typical that the later and present word for city actually meant "wall".[19]

For this situation we get more confirmation with Chou times. We know, for instance, that after the defeat of the Shang the Chou transplanted a large sector of the population of the Shang capital into their new capital at the river Lo. We know that these forced settlers were at least in part craftsmen. Others seem to have been members of prominent Shang families of culture and wealth. The craftsmen of the Shang were still recognizable over 1,000 years later as potters who continued to make pottery in Shang style in Lo-yang.[20] They occupied a certain quarter in Lo-yang, and we may assume that they occupied a definite quarter in early Chou. The forced settlement of special sectors of the population in cities remains typical: the Ch'in filled their capital and surrounding districts with 120,000 families from Central China.[21] Although the number is debatable, the fact is certainly correct, because we find about a century later families of clearly Central Chinese clans in northern Shensi.[22] The Han emperors continued this policy,[23] and here again we can later establish the existence of eastern and southern families in and around the capital.[24] The idea behind these forced settlements was, first, to break the power of recently subjected areas by removing their political leaders, their elite, and their technicians. Transplantations of prisoners of war for such reasons are well known from much later times. The most famous cases are the settlement of Roman

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late periods were forced to use certain types of textiles and forbidden to use others (regulation of 980 A.D., Shih-lin yen-yü, 3, 1b); had even as late as the late 14th century the obligation to work for the government ten days per month and/or an unspecified period in the capital once every year or every five years (texts in Li-shih yen-chiu, 歷史研究, No. 3, Peking, 1955, p. 107). They had the right to half a share of land under the system of government land distribution, but only if there was enough land available (Law of 737, Niida, op. cit., p. 632).

(18) It should be mentioned that there were a number of cities in existence in Shang time, but these are known to us by name only (Tung Tso-pin, An Interpretation of the Ancient Chinese Civilization, Taipei, 1952, p. 9). From the third century B. C. on we have reports that non-Chinese groups close to the border of China imitated city-building (Han-shu, 94a, p. 2a, for the I-ch'ü tribes).

(19) Ch. F. Hockett, Language and Culture, Memoir No. 79, American Anthropological Association, 1954, p. 112.

(20) See Lo-yang ch'ia-lan chi, Ch. 5.

(21) Shih-chi, 6; see L. S. Yang, Ts'ing-hua Journal, Vol. 11, 1936, p. 1009.

(22) Such as the clan Ch'u, 屈 .

(23) Shih-chi, 99, see Yang, op. cit., pp. 1009-1010.

(24) Especially the families living in Mou-ling near the capital Ch'ang-an, often have an Eastern origin.

soldiers in Kansu in a provincial county-seat in Han times,[25] the settlement of Near Eastern craftsmen by the Mongols near Peking, and the settlement of prisoners from the Tibetan-Central Asian area in South China during the T'ang period.[26] The second reason was to bring into the new capital wealthy people whose consumption needs would stimulate the business and transform the capital into a lively place. And lastly, to bring all artisans with special skills under the direct control of the ruler.

Transplantations remain typical of later shifts of the capital, although we do not know whether in post-Christian centuries this referred to officials, the court, and its entourage only, or also to civilians who had no direct connection with the court. Apart from forced transplantations there were, naturally, voluntary migrations of citizens in the case of a shift of the capital.[27]

For the origin of the population of cities other than the capital, our data are as yet fairly limited. In the few cases which I tried to study in more detail, I found that three distinct classes of population could be found:[28] a) in border territories descendants of soldiers who had been forced to come to the place had either been forced to stay and to settle there or had remained of their own volition; b) the leading families of cities along the borders usually came to the place already as members of important families, very often because of being exiled or transferred to such undesirable places by government order. They either settled there because they were forced to do so, or they or their sons remained there because they had found that the place gave them new opportunities. Sometimes the reason was filial piety: the sons settled at the place where the father who had died in exile had been buried. In any case, they arrived as members of the elite and remained so. c) in border territories some natives settled in a Chinese city, either because the place was already a city or a settlement before the Chinese arrived, or because they were induced by hope of profit or by pressure to come into the new town. In cases of settlement by members of the native elite or native or foreign, but non-Chinese, merchants, these sometimes entered the elite of the new place.

-- While the type of city with its palace of the ruler or his representative in the center is typical, there are deviant types; most interesting is the case of the "double cities". These consist of two clearly separated parts with different populations. The one is a fortified settlement of a conquering group. Typical of this type is the form of settlement of the Chou dynasty: the double cities of Feng and Hao and the double city of Lo-i (later, Lo-yang). This type of city has its closest parallel in the Near East and Turkestan. A late example would be Peking in Mongol times. There seem to be other forms of

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(25) H. H. Dubs, "An Ancient Military Contact between Romans and Chinese", American Journal of Philology, Vol. 62, No. 3, pp. 322-330; W. Eberhard, Belleten, Vol. 8, pp. 143-145.

(26) Po-shih ch'ang-ch'ing-chi, 白氏長慶集, 3, Shanghai ed., p. 20c; Yueh-fu shih-chi, 樂府詩集, 97, Shanghai ed., p. 650b, and 98, p. 658a.

(27) E. g., the great migrations from North China to Central and South China in connection with disturbances in the North. This topic of internal colonization will not be discussed here.

(28) W. Eberhard, "Notes on the Population of the Tun-huang Area", Sinologica, Vol. 4, No. 2, pp. 69-90; "The Origin of the Commoners in Ancient Tun-huang", Sinologica, Vol. 5, No. 1; "The Origin of the Leading Elite of Ancient Tun-huang", unpublished manuscript.

cities, but at present we do not have the data to make more precise statements. Of special interest would be a study of "market-towns", business- and exchange-centers which served rural areas, developed from earlier periodical "farmers' markets" and had, at least in their formative stage, no administrative importance. Such places exist today in China[29] and seem to have existed in early times.

What was the size of early Chinese cities? According to Maspero[30] the famous Lo-i had a circumference of 4,000 meters, i. e., assuming a square shape of the city, 1,000 meters per side, i. e., an area of roughly 1 square kilometer (0.38 square miles). Recent Japanese excavations have given valuable new data. Some of these data are a big surprise. Thus, the city Hsia-tu ("Lower capital") of Yen, south of present-day Peking, had walls of 8,000 meters E-W to 6,000 meters N-S.[31] This was by far the greatest of all cities excavated. This Chou-time metropolis, a center of commerce, had an irregular plan, indicating that it had been built in at least two building periods. Ch'i-ch'eng in Shantung, capital of another feudal state from 859 to 221 B. C., was irregularly square, with sides of 4,000 meters each, and thus more than ten times larger than the present town.[32] Some texts[33] say that it had circa 210,000 inhabitants before its destruction. Lu-ch'eng near Ch'ü-fou in Shantung had walls of 3,500 to 2,500 meters.[34] Compared to these measures, the data for Lo-i, as given by texts, seem to be very low. But Lo-i was a religious center, and the three cities mentioned above were commercial centers. Other places, recently excavated, show much more modest size: a town near Fu-hsien in Eastern Shantung had walls of 200 to 100 meters,[35] and a place in Southern Manchuria, probably slightly later than Chou time, but still pre-Christian, had walls of 82 to 133 meters.[36] In general, cities of Chou time, i. e., roughly between 1000 and 250 B. C., seem to have had sizes which remain typical for much later periods. According to a preliminary survey of the Sung dynasty[37], the average small

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(29) H. D. Scholz, Formen der ländlichen Siedlung in China, Ph. D. Thesis, Bonn, 1949, p. 119ff. The best study on such markets in the 18th century is made by Kato, op.cit., 2, pp.508-520; he found that in the province of Chih-li one village market served an average of 16,995 persons, in Shensi 20,957, in Shantung 7,895, etc. As the average village has now a population of about 500 persons, one such market center served a great number of villages. The ancient economic text Kuan-tse (trans. Maverick, Ch. 78, p. 156) believed that a normal state should have a market in its center, 50 Li (one Li was about 500 yards) from each border. On the first day the decisions should be made, on the second the prices should be published, on the third day quotations should be announced to the people across the borders. Similarly, much later laws regulated the markets along the border (Niida, op. cit., p. 715, quoting the regulation of 737 A. D.).

(30) H. Maspero, La Chine antique, Paris, 1927, p. 25.

(31) T. Sekino, A Study of Semi-circular Eaves-Tiles, Tokyo, 1952, pp. 17-18.

(32) Ibid., pp. 29-31.

(33) Chan-kuo ts'e, 8, as quoted by Ibid., p. 31.

(34) Ibid., p. 40.

(35) Ibid., p. 46.

(36) Ibid., p. 49.

(37)) Kato, op. cit., Vol. 1, pp. 301ff.

county seat had a perimeter of 2 li, i. e., each side (assuming a square city) had roughly a 250-meter length, and the surface area was about 0.023 square miles. This would mean a population of roughly 1,000 to 1,500 persons, if we use data collected in modern times for cities in India and Egypt[38] and use the highest densities. This comes as no surprise if we keep in mind that at the end of the Middle Ages, of the approximately 3,000 cities of the Holy Roman Empire, some 2,800 had a population between 100 and 1,000.[39] On the other hand, we know that the old city of Pien-chou (today, K'ai-feng) had a perimeter of over 20 li, i. e., an area of about 2.9 square miles, when built in 781 as a provincial capital; the new city, which was added in 955 and rebuilt after 1078, had a perimeter of over 48 li, i. e., an area of roughly 16.6 square miles, and the palace in this city was larger than a provincial county seat (a perimeter of 5 li, or an area of 0.17 square miles). The city of Su-chou had at this time about the same size as the new capital city, and Hu-chou was even larger. The population of the capital Pien-chou is not known; the whole capital district at about 1100 is said to have had a population of 261,117 families, i. e., roughly 1.2 million.[40] If we assume population densities of the same proportion as before, we should expect a population between 1 and 1.6 million for the capital alone. The population density of the capital was, therefore, lower than the highest densities known today. The estimates for Hang-chou in the 13th century vary between 500,000[41] and 900,000[42] for the central part of the city alone. These estimates are not based upon the size of the city, however.

The city as such was surrounded by a wall.[43] From Sung time on more and more cities without walls came into origin, although some of them were walled in in later periods. The wall and the structure of the city were planned; we know of examples in which the emperor was presented with plans developed by officials of the palace. It was drawn to scale: 1 li, i. e., 550 meters, was

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(38) K. Davis, The Population of India and Pakistan, Princeton, 1951, pp. 144-145. The data on K'ai-feng come from the Hou-ching-lu, 侯鯖錄, 3, p. 5a; on Su-chou from Kato, op. cit., Vol. 1, p. 301; on Hu-chou from the same work.

(39) R. E. Dickinson, The West European City, London, 1951, p. 290.

(40) Sung-shih, 宋史, 85, p. 4701, of the K'ai-ming edition.

(41) Balazs, op. cit., p. 233.

(42) Kato, op. cit., Vol. 2, p. 218. Kato gives an additional 600,000 for the southern and northern precincts.

(43) The structure of these walls differed: in early periods the walls were often made of adobe (i. e., Lü-shih ch'un-ch'iu, 18, 6, translated by R. Wilhelm, p. 308; Lun-heng, Ch. 12, 2, trans. A. Forks, Vol. 2, p. 70); even the famous Great Wall was first made of adobe. But we know also of palisades (Po-wu-chih, Ch. 7, p. 2b for the city of Tai in N-Shansi; Lü-shih ch'un-ch'iu, Ch. 14, 4, trans. Wilhelm, p. 188, for the city of Ying in the state of Ch'u). Later, brick walls became more common. Larger towns have in addition to the wall one or two outer walls, with ditches in between and special obstacles outside the other walls (cf. the description of Hsiang-yang in the late Sung time in Hsiang-yang shou-ch'eng lu, p. 12a and others). The height often was considerable: Tang-t'u had walls of 3 chang, i. e., about 30 feet, in 1129 (Yün-lu man-ch'ao, 雲麓漫鈔, 1, p. 5a); the imperial palace in the 8th and 9th centuries had 4.8 chang, i. e., about 48 feet (Hou-ching-lu, 3, p. 4b).

represented by 2 ts'un, i. e., 6 cm., or roughly 1:10,000.[44] Discussing the city plan for the new capital in 968, the emperor changed the whole pattern by adopting curved walls instead of the traditional square or rectangular pattern.[45] The reason for this seems to have been his personal fancy, but later historians tried to prove that military reasons were also influential.

The city gates were usually symmetrically arranged, protected by gate-towers and, at least in Sung times, the exit was protected by a special structure that required one to make a right angle when leaving the gate; only those gates which were used by the emperor were straight.[46]

Inside, the city was divided into "hsiang" (quarters), at least from T'ang times on. The number of these quarters could be as high as 24 (for Pien-chou in the 12th century),[47] but smaller cities seem to have had no quarters at all. The quarters were divided into "li" or, later, "fang", blocks. The blocks had their own names which were structurally the same as the names of rural districts,[48] indicating a similar type of administration. The blocks were closed by gates at night just as the city's gates were closed for the night.[49] Individual houses had no doors leading to the main streets;[50] this occurred only from Sung times on. Within the block there were only "lanes". The population of the blocks seems to have often been uniform: they had the same business[51] or they came from the same places.[52] In a number of cases, it seems possible to draw conclusions about the origin of the inhabitants of certain blocks by studying the name of the block.[53]

The arrangement of the population in blocks, separated by wide streets, may never have been completely strict, and it certainly broke down in the Sung period which was, in general, a period of higher mobility. But the general pattern of arrangement had as its closest parallel the pattern of settlement in

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(44) Yün-lu man-ch'ao, 2, p. 5a, with reference to the map of 1080. The K'ui-t'an-lu, 揆 丹 錄 , 13, p. 3a, a 13th century text, mentions that craftsmen were asked to make an estimate of the costs of public projects, and that their estimates were usually too low.

(45) T'ing-shih, 程 史 , 1, p. 4a.

(46) Kato, op. cit., Vol. 1, p. 307.

(47) Nan-chin chi-wen, 南 燼 紀 聞 , p. 2b.

(48) But one "li" in rural districts could comprise several "villages".

(49) Kato, op. cit., Vol. 1, pp. 310-312.

(50) In T'ang time, only high officials were allowed to have street doors (T'ang Hui-yao, 86, for the year 831, quoted by Ibid., Vol. 1, p. 311).

(51) Around 830, all instrument-shops in the capital were in one block (Yüsh-fu tsa-lu, quoted by Ibid., Vol. 1, p. 327), and the prostitutes lived in another block (Ibid., Vol. 1, p. 310).

(52) Cf. Lo-yang ch'ia-lan-chi, quoted by Ibid., Vol. 1, p. 313.

(53) W. Eberhard, "Preliminary Note on Place Names in Medieval China", Journal of the American Oriental Society, Vol. 74, 1954, pp. 71-74. The concept of "daughter-cities", so common in the Mediterranean area, seems to have also existed in China, to judge from place names.

the Near East: there we find this same system of blocks, originally settled (in many cases at least) by nomadic groups or groups of craftsmen, separated from one another by gates which were closed during the night. Each "ghetto" was equipped with all the public institutions of the time, with no general cooperation among all the wards, without developed "municipal institutions"; here, too, the inhabitants were usually "foreigners", groups which came to the city from a distance.[54]

In the classical Chinese city, as in the city of the Near East, markets, often occupying the space of a whole "block" (fang), were interspersed between the blocks and constituted the unifying element between the blocks. These markets seem to have corresponded, at least from Han times on, to our shopping districts; but until fairly late times, at least a part of the shops still consisted only of sheds. Some markets, especially the periodic markets and the fairs, retained this character down to present times.[55] Of other civic institutions we know as yet very little. In modern China the public bath plays an important social role,[56] as it does in the Near East; but I was unable to find references to public baths before the Sung period;[57] earlier references seem to refer generally to a bathroom as part of the house of a rich family.[58] In

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(54) Here the general theory of J. H. Boeke of a "dual society", developed for Indonesia, can be applied to the Near East and, at least to a certain extent, to China also. See his Economics and Economic Policy of Dual Societies, Haarlem, 1953. Data on Near Eastern and North African cities on these points can be found in every detailed study, such as those by M. Clerget, H. A. R. Gibb, L. Massignon, R. le Tourneau, et al.

(55) On fairs, see E. Balazs, Les foires en Chine, ed. de la Libr. Encycloped., Bruxelles, 1953. The article needs, however, some corrections and additions. The Eastern market of Ch'ang-an in T'ang time was a square of 600 pu, i. e., roughly 900 miles (Kato, op. cit., Vol. 1, p. 325). There were, as in recent times, temple-markets in China with periodic fairs as well as permanent businesses. The famous Hsiang-kuo-Tempel in K'ai-feng during the Northern Sung period had a fair on the first day of the fifth month (Ibid., Vol. 1, pp. 370-371), but was a market open five times a month (Ibid., Vol. 1, p. 369), in which fine paintings as well as rare books were bought and sold. It was, therefore, often visited by scholars (see T'ing-shih, 楨史 , 11, p. 11b, and 13, p. 4a; Ch'ü-yo chiu-wen, 曲洧舊聞 , 4, p. 4b.

(56) A. Milam, A Study of the Student Homes of China, New York, 1930, p. 51.

(57) I-chou chia-ch'eng, 宜州家乘 , pp. 2a and 7a; and I-chien-chih, 夷堅志 , 29, p. 8a.

(58) For pre-Christian times, cf. Huai-nan-tse, 12, p. 2a. For later times, the references are numerous. Little is known about their technical equipment. They seem to have consisted in the main of large tubs (Cf. Ch'ao-yeh chien-tsai, quoted in T'ei-p'ing kuang-chi, 267, Vol. 21, p. 38a), similar to the Japanese bath. Chinese in earlier times seem to have paid more attention to bathing than in later periods. Persons who did not take baths and who were not clean got appropriate nicknames (Kui-t'ien-lu, 歸田錄 , 2, p. 5a; Sung period). The most famous man in this respect was the famous reformer Wang An-shih (Shih-lin yen-yü, 石林燕語 , 10, p. 6a; 11th century) who was also famous for his absent-mindedness when eating. According to the order of 737, even prisoners had the right to have a bath per month (Niida, op. cit., p. 790). Bathing in rivers seems to have been general among lower-class Chinese and southern natives, but was frowned on by scholars.

some cases such public baths were connected with temples.[59] This may indicate that public baths were, as public toilets,[60] built on the basis of "foundations", because the institution of the religious foundation was very widely used for temples and monasteries from post-Han times on, as it was in the Near East.[61] Temples, apart from those built by the government for the representative state-cult, were built by individuals, by subscription of the inhabitants of one or several blocks, or by the setting up of a foundation. From Han times on, we call these temples Taoistic or Buddhistic temples. We may assume that similar popular temples did exist before that time.

Between the blocks we find the streets. The few main streets used for ceremonial purposes were fairly wide. The capital in the early 7th century had avenues up to 150 meters wide, and some of 70 meters width;[62] these were certainly exceptions. The smaller streets were certainly not much wider than those in the Near East or Europe at that time.[63] At least in South China, the streets in the 11th century were paved with bricks.[64] We have no data on street-cleaning, street illumination, and fire-protection in early Chinese cities.

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(59) I-chou chia-ch'eng, pp. 8a, 8b, 9a, 9b; R. Irvin, The Evolution of a Chinese Novel, Cambridge, 1953, p. 78. The above-mentioned Wang An-shih was enticed by friends into a temple-bath (Ch'ü-yo chiu-wen, 10, p. 4b, and Shih-lin yen-yü, 10, p. 6a). At this period (11th century) a lane in the capital had the name "Lane of the bath-house" (Kui-t'ien-lu, 1, p. 1a) which certainly refers to a public bath.

(60) For modern times, see J. C. Scott, Health and Agriculture in China, London, 1952, pp. 66ff.; Journal West China Border Research Society, 13, p. 48ff. For the Sung time and the Mohammedan settlement in Canton, see T'ing-shih, 11, pp. 2b-3a.

(61) In general, cf. A. Bonné, State and Economics in the Middle East, London, 1948, p. 119ff.; Religious foundations were early in India (example in U. N. Goshal, History of the Indian Revenue System, Calcutta, 1929, p. 209). Their first occurrence in China is not yet clear. The institution existed certainly from the third century A. D. on, and had its greatest spread in Sung time.

(62) Yün-lu man-ch'ao, 2, p. 5a. Roads in Ch'in time in the third century B. C. were ordered to be made 50 pu wide (Han-shu, 51, p. 1a); this corresponds to about 60 meters. We have only one report for the early post-Christian period on organization and costs of high construction: the highway from I-chou to Lo-yang, the capital, contained a 258 Li stretch (1 Li is about 500 yards) which took 9 years and 4 months to build; 2690 workers were used, who worked 766,800 man/days. The costs were 499,400 hu grain (1 hu is about 20 liters), according to an inscription quoted in Chung-kuo she-hui ching-chi chi-k'an, Chinese Journal for Sociology and Economics, Vol. 7, No. 1, p. 25. It is interesting that the concept of man/hour or man/day was already accepted.

(63) According to Dickinson, op. cit., p. 316, the main avenues were 6 to 8 meters wide, living streets, 2 to 3 meters. The city of Gadames in Tripolitania has streets of 1 to 2 meters width (O. Constantini, Geographischer Anzeiger, Vol. 42, 1941, p. 256).

(64) Ch'ing-p'o tsa-chih, 清波雜志, 2, p. 2b, and Ch'ing-p'o pieh-chih, 清波別志, 2, p. 3a. According to B. Karlgren's concept, Museum of Far Eastern Antiquities, Vol. 16, p. 215, of ode 142 of the Shih-ching, paths paved with tiles were known already in pre-Christian times.

Cleaning seems to have been left to the inhabitants of the individual wards, if it was not ordered by the government for special occasions. Illumination was not too important, as all life came to a halt during the night when the gates were closed. This order was occasionally lifted during great festivals such as the New Year and the emperor's birthday. From the 10th century on, when all such regulations weakened, we hear occasionally of city illumination through orders to all individual households to set up lights.[65] Fire-protection was certainly organized from Sung times on, but it seems that this was a part of the central government administration and not a municipal institution.

A number of cities in China today have empty land within the walls, and often agriculture is practiced on such land. But an order of 932 A. D. already prohibited the construction of private houses on fields within the blocks.[66] The imperial palace, too, had in addition to parks within the capital palace gardens and palace fields.

This brings us to the administration and the public services provided by the government. The city was regarded as the administrative center of a territory; only the capital city had its own administration which served practically the city alone. There was no municipal council, no mayor in our sense; the administration of the city proper was in the hands of the staff of the administrator of the region, usually, again as in the Near East, a military officer of the administrator.[67] The quarters had, at least in Sung times, their own chiefs, who also were not elected from among the citizens, but were appointed career officials of the government.[68] Thus, the state through its officials controlled the affairs of the whole city, including its social welfare institutions. In Sung times fire stations,[69] orphanages,[70] homes for the

(65) Such an order for the early 10th century in Chiu Wu-tai-shih, 舊五代史, 22, p. 422 - 6d of the K'ai-ming edition.

(66) Wu-tai hui-yao, 26, quoted by Niida, op. cit., p. 93.

(67) In the 11th century, the title of the commander is usually "i-tsai", 巡宰, or "wei", 尉. This man had his office in the city, but acted as judge not only for the city but also for the surrounding rural area (cases are mentioned in Ch'ü-yo chiu-wen, 10, p. 1a; Chiang-lin-chi tsa-chih, 江隣幾雜志, 1, p. 4b; T'ing-shih, 6, p. 2b. The last case, reporting on a rebellion of an owner of iron-foundries and his workers, is of special interest, because the commander had left the city overnight to settle a suit in a distant village.

(68) A quarter-master (called kuan, 官), mentioned in T'ing-shih, 6, p. 3a, had formerly had a military post.

(69) In the 13th century, the capital had 14 fire-houses in the city and nine outside, manned with special soldiers. There were more than ten watch-towers protecting the city (Bulletin of Chinese Studies, Vol. 4A, 1944, p. 274); the palace had its own fire-ladders (Kui-t'ien-lu, 2, p. 6a; 11th century). On the organization in later periods see P. Mayborn, Essai sur les associations en Chine, Paris, 1925, pp. 157-158.

(70) An orphanage was founded in 1247 (Bulletin of Chinese Studies, Vol. 4A, 1944, p. 275). In addition to this state institution, the state had special funds for orphans and widows and occasionally enforced re-marriage of widows (Hsü I-t'ang, loc. cit., Vol. 8, 1948, pp. 65-82, for a general discussion of welfare institutions). But there were also orphanages financed by private foundations (a case of the 18th century is described in Ming-chai hsiao-shih, 明齋小識, 2, p. 10a). The state in the 11th century had an office controlling the property of orphans and could give loans, the interest of which could be used by orphans (texts in Kato, op. cit., Vol. 2, p. 235-237).

old,[71] hospitals,[72] pharmacies,[73] wine-shops,[74] tea-houses,[75] houses of ill-repute,[76] granaries,[77] and schools[78] were all controlled and financed by the government, although there were some private schools as well as granaries, granaries set up cooperatively by citizens, orphanages and hospitals operated by religious groups, and private houses of ill-repute and tea-shops.

In summary: we find the city tightly controlled by the government, not as an independent unit, but as part of a territory. There were no municipal institutions, but there were institutions which served the wards of the city; these, however, did not participate in the administration. Organizations existed only in wards, not city-wide. We know of citizens' clubs formed to provide

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(71) A home for the old was created in 1130 (Bulletin of Chinese Studies, Vol. 4A, p. 275), but similar institutions existed already earlier (Ibid., Vol. 5A, 1945, pp. 33-49) and were under the control of the state "Bureau for Housing and Care".

(72) Under the state "Bureau of Medical Care" with state doctors who visited the poor in their houses or in the hospitals (Ibid., Vol. 5A, pp. 33-49, and Vol. 4A, p. 275). They were often farmed out to Buddhist priests, who got a special bonus if less than 20% of the patients died. Already in earlier times, the Ministry of the Imperial Palace (T'ai-ch'ang) supplied, according to law, a doctor for each army of 500 men (Niida, op. cit., p. 727), and the order of 737 regulated free medical care and medicine for the poor (Ibid.). If a high official got ill, the Emperor often sent his own "state doctor", which caused considerable misgivings, because these doctors were not always good but could not be refused (Shih-lin yen-yü, 5, p. 2b). There were specialists who had their private practice in cities; Nestorians from Western Asia were famous as good eye specialists (Frontier Studies 1942/4, Ch'eng-tu, 1945, p. 30).

(73) A state pharmacy was opened in 1248 (Bulletin of Chinese Studies, Vol. 4A, p. 275), but earlier regulations existed. It might be added that a state "Bureau of Burials" existed which created cemeteries for the poor (Ibid., Vol. 4A, p. 275, and Vol. 5A, pp. 33-49). These too were usually in the hand of Buddhist priests.

(74) Ibid., Vol. 4A, pp. 257-258. There were, of course, private wine-shops and bars, but they had to have government licenses (cf. T'ing-shih, 6, p. 1a, for example); high officials could visit such establishments (Kui-t'ien-lu, 2, p. 8a), but for a prince, to drink in such a wine-shop was regarded as criminal (Ibid., 1, p. 1a; 11th century).

(75) Bulletin of Chinese Studies, Vol. 4A, p. 261. In addition, there were many private tea-houses.

(76) The government built in 1141 twelve state houses of prostitution for the convenience of the soldiers; later the government had 23 such houses in the capital, controlled by two branches of the administration (Ibid., Vol. 4A, p. 260). There were, in addition, private establishments.

(77) In general, cf. Ibid., Vol. 8, pp. 65ff.

(78) In general, cf. Ibid., Vol. 4A, pp. 276ff. There were private schools, on the basis of foundations (texts in Niida, op. cit., p. 409) as well as schools financed by a foundation given by the state (Ibid., p. 400). Some schools were restricted to members of certain clans who had set up a foundation (Hu Hsien-chih, The Common Descent Group in China, New York, p. 71, gives texts).

group entertainment or some kind of social insurance;[79] we know of guilds[80] and regional organizations of tradesmen[81] clearly since Sung times,[82] while the clubs seem to be older.[83] But the guilds and other organizations were never organized on a nation-wide scale and, therefore, never gained power. I know of only one strike of the businessmen against the government, when the government confiscated one-fourth of the property of the pawnshops.[84] This is the same situation as in the Near East, where a strike or other collective action was extremely rare.

Although we know of cities which at first were only market-centers and were raised to the rank of a city[85] only when they had grown or acquired military importance, M. Weber's description of the Chinese city as the seat of the administration, as the home of officials, is essentially correct. At all times, the number of official buildings and of homes of officials and their servants must have been high. In the 10th century, all provincial governors, censors, military commanders, and generals of the provinces had an extra house in the capital,[86] even though they were rarely in the capital. These officials were interested in administration and the government, but had no special interest in municipal, city affairs. They enjoyed living in the city with its comforts and its amusements such as theater, tea-houses, wine-shops, book-shops, etc. They were great consumers and greatly stimulated tertiary industries. They even often invested in pawn-shops, in precursors of banks, in houses and property and got good rental incomes from these investments, but they seem not to have invested in productive enterprises. They enjoyed the security in the city

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(79) On such organizations (called she, 社) we have many data from the Tun-huang manuscripts (Bulletin of the School of Oriental Studies, Vol. 9, pp. 1038-1039; Vol. 11, p. 156, et al.); similar organizations continued until Yüan (Shicho, 史潮 , Vol. 1, No. 1) and Ming time (Toho gakuho, Vol. 11, Part 1, pp. 305-320). Their parallel is the Japanese "kumi"; see J. Embree, Suye Mura, New York, 1936, pp. 113-114. In later times we find special literary and political clubs. Mutual savings clubs, as they are well-known in China, Japan, and Annam, and real lotteries, often started by temples, developed later.

(80) In spite of the extensive literature on guilds in China the time of their origin seems still to be unclear. The certainly did exist in Sung time, i. e., at the same time as they began to become prominent in Europe and the Near East.

(81) The so-called "hui-kuan", 會館 . On these, cf. P. B. Mayborn, op. cit., pp. 56-59; H. B. Morse, The Guilds of China, London, 1909; Kato, op. cit., Vol. 2, p. 557ff., et al.

(82) The term "hang", later used to mean "guild", is, of course, earlier, but it is doubtful whether it meant "shop" or "guild" or both in T'ang time.

(83) Certainly known since T'ang time; these "she" may have developed of organizations of citizens to organize the ceremonies for the local "God of the Earth" (she).

(84) Kato, op. cit., Vol. 1, p. 497.

(85) Ibid., Vol. 1, pp. 380, 391, 404, gives two examples from the 8th century and one later example.

(86) Chiu Wu-tai-shih, 32, K'ai-ming edition, p. 4241ba; earlier literature, such as the Tunk-kuan tsou-chi, 2, p. 1a, indicates that this has been the case in other periods, too.

behind the walls. And they found here the congenial atmosphere and the leisure to create and to maintain the "great tradition".

But they also had the power to control all activities of the city, especially business. They ordered curfew during the night; they issued the laws that the gates of the city as well as those of the blocks were closed in the evening and opened in the morning; it was better for their security.

They controlled and taxed the markets and determined the prices; they fixed the interest rates on loans; they taxed every contract, every loan, or other document, and only after payment of the tax, the law guaranteed the contract. They even controlled the type of textiles which could be produced and determined which class of the population should be allowed to use certain materials and fashions of dress and which class could not use them. Actually, this does not mean that China was a despotic, managerial state, with a kind of state socialism, because at a closer look we find that our lives in the city today are also tightly regulated and controlled, and only in part by orders set up by the cities themselves, in part by the state or federal government. But, (1) China never developed the concept of the city as an independent unit. The city was always regarded as the administrative center of a region. (2) There was no concept of the city as a municipality with its own self-government. No concerted action or organization of citizens occurred. The city was an agglomeration of blocks and quarters, and only within these blocks was some degree of integration, some concerted action and organization possible. (3) As there was no self-administration in the city, no city-law developed.[87] No Chinese city had its own charter and its own laws; no Chinese city could fight against the central or provincial government for its own rights. In all these respects the Chinese city was, typologically speaking, related to the city in the Near East. It was the home of officials, of the intelligentsia, of the "grand tradition", with industries of consumption, tertiary industries, serving them. Those few secondary industries which developed in China--iron-works, porcelain factories, etc.--often developed outside the cities, or if they and accompanying financial organizations were seated in the city, they were tightly controlled and forced to serve. It is, however, not true, as Chinese tradition wants us to believe, that the "merchants" were the lowest social class within a four-class schema, because they are not "productive". Big business and financial organizations, as they existed in medieval China, seem to have been often in the hands of younger sons of gentry families, i. e., those young men who were not interested in books and learning but had an adventurous type of personality could here find an approved outlet. But it is typical that these businessmen, if they were successful, tried to buy official titles for themselves, or rather their sons, and thus tried to re-enter the ranks of the gentry. And, naturally, as businessmen, they had to work for those members of the family who were in official positions, and were controlled by them. Only with the opening of the country did these businessmen of gentry origin succeed in freeing themselves from this patronage.

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(87) Thus, H. T. Fei, China's Gentry, New York, 1953, p. 95, can somehow narrowly describe the Chinese city as only an instrument of the ruling classes, a symbol of power. For the situation in this respect in the Near East, see Bonné, op. cit., pp. 368-382, and G. von Grunebaum, "The Structure of the Muslim Town", Islam, Essays in the Nature and Growth of a Cultural Tradition, Memoir No. 81 of the American Anthropological Association, Chicago, 1955, pp. 141-158.

This control prevented the growth of an entrepreneurial spirit.[88] And it seems that this spirit could develop in the free Western city.

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(88) Y. Brozen, "Entrepreneurship and Technological Change", Principles and Patterns of Economic Development, ed. by H. F. Williamson and J. A. Buttrick, New York, 1954, pp. 196-226.

SOCIOLOGICAL ASPECTS OF THE ECONOMIC ADAPTATION OF ORIENTAL IMMIGRANTS IN ISRAEL: A CASE STUDY IN THE PROCESS OF MODERNIZATION

The Problem

This paper contains an analysis of certain aspects of some economic enterprises, mostly agricultural cooperative settlements in Israel, established by new, especially Oriental, immigrants. But rather than providing a full description of the various types of such settlements, the chief purpose of this paper is to examine what light their development, their successes and failures, can throw on the problem of the adjustment of various "traditional" social structures in a framework of modern economic enterprise and politics. The view has long been accepted that a society in which particularism, ascription, and functional diffuseness are dominant value orientations will find it extremely difficult to adapt itself to the needs of a modern economic industrial system with its strong emphasis on specificity, universalism, and achievement. The case of China is often used to illustrate this fact, although much additional material could also be drawn from other places.[1] But lately, Marion Levy, one of the main exponents of this view, has shown how certain special structural arrangements of these "traditional" value orientations have enabled one society at least--Japan--to undertake a relatively successful program of modernization and industrialization.[2] The purpose of this paper is to see what light material on the new moshavim (i. e., agricultural cooperative settlements) and some other economic activities of new immigrants to Israel in agriculture and industry can throw on this problem; i. e., whether a particularistic, ascriptive, and diffuse social structure may adapt itself to the exigencies of a modern economy, while at the same time retaining some, even though not all, of its original characteristics. Since the main purpose of this paper is analytical, I shall not present detailed descriptions of the different types of moshavim, but rather bring out some of the more salient features.[3]

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(1) For one of the best examples of such analyses see Marion J. Levy, The Rise of the Modern Business Class in China, New York, 1950.

(2) M. Levy, "Contrasting Factors in the Modernization of China and Japan", Economic Development and Cultural Change, Vol. II, No. 3, pp. 161-178.

(3) I am indebted to Mr. Moshe Lissak, graduate student and research assistant at the Department of Sociology of the Hebrew University, who was in charge of the field work at the moshavim, for help in the gathering and analysis of this material. Mr. Lissak has published a mimeographed report of these researches in Hebrew in which further details can be found. For the general background of the new immigration to Israel, and the place of moshavim and other economic enterprises and settlements in the process of absorption of new immigrants, see S. N. Eisenstadt, The Absorption of Immigrants, Glencoe, 1955. For a more detailed description of the various researches on which this analysis is based, see S. N. Eisenstadt, "The Process of Absorption of New Immigrants and Institutionalization of Immigrant Behavior", Human Relations, Vol. V, No. 3, pp. 223-246, and No. 4, pp. 373-395; also Report on Research Activities, Department of Sociology, The Hebrew University, The Eliezer Kaplan School of Economics and Social Sciences, Jerusalem, 1955.

This approach implies that the social and economic organization of moshav is an example of at least one type of modern economic enterprise and political unit. But we must bring out from the beginning some of its features which appear to limit its "modern" character--or, in other words, its structure of universalistic specificity and achievement oriented criteria. In order to do so it is necessary to give a brief description of a moshav.[4] A moshav is a cooperative unit, in which all the land is allocated to different families in equal shares, and all the marketing done through cooperative agencies of the whole settlement, which also determine its investment and development policy. Most of its produce is oriented towards the market, but a great proportion is consumed by the family unit. The village is governed by several committees to which members are elected on an individual (i. e., universalistic) and not family (particularistic) basis. All adults have equal votes. Most of the old moshavim (i. e., those established in the 1920's) have developed various types of intensive and extensive farming, based largely on the latest technical developments in agriculture, and prosper greatly in a market economy.[5]

The main characteristics which distinguish the moshav from a pure modern enterprise are:

1. The fact that this is an agricultural enterprise limits some of the possibilities of its development in terms of specificity, specialization, etc.

2. This general limitation is enhanced by the fact that the moshav uses only a minimum of hired help, and most of the work has to be done by the members of the family.

3. The strong communal identification of the moshav, and the strong emphasis on communal responsibility and development necessarily set some limits to the purely economic considerations of the individual economic unit. To be sure, these considerations may become more important on the level of community planning, but here they are also affected to some extent by considerations of social welfare.

4. All these limitations are obviously related to limitations of numbers--a moshav has rarely more than 100 to 150 households, which in their turn greatly affect the extent of social differentiation.

To these limitations common to most moshavim are added others peculiar to those of new immigrants. The most important of these is the fact that most of them are still in the first stages of economic stabilization, and still largely dependent on outside sources of capital and outside labour markets. But despite this one can already distinguish different stages of economic and social stabilization among them. Moreover, some of these characteristics tend to offset some of the limitations inherent in a moshav as such, since they expose the immigrants to at least some of the forces of the wider, "free" labour market and market for agricultural produce. I shall, therefore, draw also on comparative material from other types of economic activities by new immigrants, especially other types of agricultural employment (e. g., hired labour) and also, to a more limited extent, industry.

But even the limitations inherent in the structure of the moshavim may not be entirely devoid of interest to our problem--mainly for two reasons.

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(4) For a full description see Y. Garber-Talmon, "Social Differentiation in Cooperative Communities", British Journal of Sociology, 1952, p. 339ff.

(5) See G. Muenzer, Labour Economy in Palestine, London, 1946.

First, some "social" values and directives are inherent in all modern economic planning, especially in the era of the welfare state; and secondly, they may have some bearing on the problem of development of small-scale industry--a problem which is of central interest to some students of underdeveloped countries.

Bearing all these limitations in mind, we may now proceed to analyze the factors which influence the success or failure of moshavim, and their adaptability to other agricultural and industrial enterprises among new immigrants.

Some Aspects of the Social Structure of Oriental Jews

Since we are interested mostly in the problem of the adaptation of a traditional society to modern economic exigencies, I shall be concerned chiefly with Oriental immigrants to Israel, i. e., those coming from Yemen, Persia, North Africa; but for comparative purposes I shall also draw on material from the Balkans.

Some of the most common characteristics of the social structure of Oriental immigrants to Israel seem to be the following:

1. The existence of relatively wide, extended families and kinship relations.

2. Traditionalism, manifesting itself in strong emphasis on traditional authority of the elders and on the collective responsibility of the members of such a family.

3. A relatively small extent of economic specialization and differentiation.

4. A relatively rigid occupational structure which seems to have been largely transmitted from generation to generation in the family.

5. Social differentiation among them is based on ascriptive criteria, where tradition, family, wealth, and standing in the community are the most important factors. The main elites were based on status of certain families, wealth, and learning. Only among some of the North African groups do we find already a more differentiated picture in general, and especially one relating to ways of achieving wealth and the presence of some professional elites (teachers, lawyers, higher grade clerks, etc.) in particular. But whatever the extent of specialization and differentiation--and in all cases this extent was rather small--the main orientations of these groups of immigrants were as yet largely bound by the "traditional" value-orientations, i. e., particularism, ascription and diffuseness, as well as a very strong collectivity orientation.

The Main Directions and Agencies of Change

After being directed to a moshav or to an industrial plant, these immigrants were usually faced with the necessity of adjusting themselves to new, different principles of social organization and work. First, they had to adjust to more mechanical types of work and the use of new types of mechanical appliances. Second, their work was organized around a time perspective which differed largely from that to which they were accustomed. It was much more future-oriented, extended over a longer period of time, and necessitated a certain facility with relatively complex monetary calculations and arrangements. In this way the various economic activities lost their close connection with solidary

daily relations. Their direct inter-weaving in the structure of various primary groups was greatly weakened and they became mechanized and divided into small mechanical units.

Third, instead of the extended family, the small family in the economic sphere and the individual adult (man or woman alike) in the political sphere became the main units of social activity.

Fourth, a strong demand developed for the acquisition of new social skills--especially in the management of different both social-political and economic committees. These skills differed greatly from those of the older, traditional elites. In the economic sphere they were connected with demands for new time perspectives and organizational abilities, while in the political field--most prominent in the moshavim--the necessity arose for more democratic internal practices on the one hand, and for the ability to deal successfully with outside agencies of a new type, on the other.

Fifth, perhaps the greatest amount of change took place in the relations with the "outside" society. In the economic field these outside forces were represented by the relatively free labour market and the market for commodities, on the one hand, and large bureaucratic marketing companies, on the other. For various basic investment and financing purposes the immigrants were dependent largely on the main agencies of absorption--the Jewish Agency, the Histadruth, etc.--which were predominantly bureaucratic. In the cultural and political field many outside agencies--the school, the army, political parties, and various voluntary organizations (which were all based on universalistic and achievement criteria)--began to permeate the immigrants' groups, to make numerous demands on them, and to offer different kinds of rewards. Sometimes there was a very close connection between the various absorbing agencies and the political groups and other organizations.

All these new demands of the absorbing society were usually mediated to the new immigrants by the instructors (agricultural and cultural instructors, school teachers, etc.) who were sent to them by the different absorbing agencies to guide them in their new life. The instructors had, at least in the first period of absorption, very great powers, since most of the facilities allocated to the immigrants could only be received through them. In the first stages of absorption the behavioral pattern of an instructor--e. g., whether he was a democratic or an authoritarian type--was among the decisive factors which could make or break a moshav.[6] But after the first initial adaptation was somehow made, other forces became more important in shaping the destiny of a moshav. Here the internal structure and social relations of the group (or groups) of immigrants were gradually becoming decisive.

Conditions of Successful Adaptation

First, it should be stressed that contrary to the point of view of some accepted theories no relationship was found between the extent of initial differentiation and specialization and generally of "traditionalism" which may have existed in any group of immigrants, and its success in establishing a moshav (or, in the cases of individual workers, in adapting themselves to patterns of industrial work). Both more "traditional" (e. g., some of the Yemenites) and more differentiated groups (e. g., those coming from North Africa) were sometimes successful and sometimes unsuccessful in this process of adaptation. Our investigation shows that not these static structural characteristics but other,

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(6) For details on this point see Eisenstadt, The Absorption of Immigrants, op. cit., pp. 172-200.

more dynamic processes, are mainly responsible for the success or failure of adaptation. In most general terms, the most important factor here was found to be the extent to which the old social structure has been able to provide enough social and emotional support for enough of its members to develop innovating activities appropriate to the new setting.

Our comparative investigation showed the following to be the most important factors influencing the development of this possibility:

1. The internal cohesion and flexibility of the family structure--both of the nuclear and the extended family. This applies chiefly to the structure of authority, intergenerational relations, and the extent of demands made on the members in terms of family authority, especially in the field of economic relations and activities. Insofar as the family has strongly authoritarian values and behavior patterns in the name of which the elders limit the activities and aspirations of the younger people, frustrate them in their efforts to adapt to the demands of the new structure, and make demands on all the fruits of their (and the women's) economic activity, and at the same time greatly discourage any attempts to acquire and exercise new skills (in the economic, cultural, and political fields, etc.), we always witness a decrease in the adaptive skill of the younger and older people alike. If, however, the pattern of authority is more flexible, the aspirations of the younger people perhaps even encouraged, and some extent of free use of the rewards of their work allowed them, we usually observe a growing adaptability which is sometimes even transferred back to the older people. The important factor here is the extent to which the wide family provides a basis of socio-psychological, and to some extent even economic, security, which fosters some changes in its internal structure and attempts by its various members to learn new skills and patterns of behavior. As we shall see later, the great importance of this factor implies that some of the basic characteristics of the traditional structure remain in the new setting, albeit in a changed way.[7]

2. The second factor which was found to influence greatly the development of, and adaptability to, modern economic and political tasks is the nature of the system of stratification of a given immigrant community and of its elites. Here the major factors are the extent of flexibility of the status system, the extent of interchangeability of different elite tasks (e. g., economic, political, cultural), the extent to which the original elites had ab initio accepted subgroups within themselves (e. g., when within the traditional religious elite an accepted subgroup concentrated on outside economic activities, commerce, etc.) and the extent of both basic solidarity and relatively small differentiation between the elites and other strata of the population. This was found to be true in many of the Yemenite and some of the rural North African and Balkan groups, whereas among some other Eastern groups (especially among urban North Africans) the obverse was found. In the first type adaptability to modern economic and political tasks, and general stabilization and development of the moshavim took place, while in the last the degree of adaptability was much smaller and the different moshavim quite often became disorganized.

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(7) The general importance of the internal solidarity of the family for adaptation to new tasks has been discussed at length in Eisenstadt, "The Process of Absorption of New Immigrants in Israel", op. cit., No. 3. See also the discussion in W. J. H. Sprott, Science and Social Action, Glencoe, 1954, Ch. 5.

The importance of these differing characteristics of family structure and the system of stratification for adaptability to various "modern" tasks was found to reside in the fact that:

1. They enabled the development of a new elite, willing to learn these new skills, which acted in the economic, organization, and political sphere. This elite could become more or less accepted by the absorbing society and was able to organize various activities according to the patterns of this society.

2. This new elite (or the members of the old elite who had learned new tasks and patterns of behavior) was accorded an established place in the structure of these groups, and found some sort of modus vivendi with the older elites. These arrangements could differ and display different degrees of predominance of each elite, but the most important types were:

   a. The mutual acceptance of the two elites; and

   b. The gradual transmission of most dealings with the "outer" world to the new elite (or to those among the old who learned the new tasks).

   In this way the basic solidarity of the group was not disrupted despite the structural changes which had taken place in it.

3. Closely connected with this process was the fact that insofar as the stratification system was flexible, it enabled the development of some new status criteria and new groups without great disruption of the cohesion of the old group. These new criteria and new groups (e. g., criteria of economic achievement and specialization, of place in a youth movement, political party, etc.) often overlapped with many of the older ones (e. g., family tradition, learning, etc.) without creating close groups constituted only according to one type of criterion, and in this way also enabled a more continuous and stable development.[8]

From the point of view of the general theoretical problem posed at the beginning of this paper, this conclusion entails a basic reformulation of the usual approach to the problem of relation between degrees of traditionalism and success in adaptation to modern conditions. If the preceding analysis is correct, it means that the static structural characteristics--while important for the understanding of immigrant groups at a certain level of abstraction and comparison--were not in themselves the most important determinants of the degree of adjustment or adaptation to modern conditions. The important characteristics seem to be the other more dynamic factors analyzed in the preceding paragraph. These characteristics--e. g., degree of solidarity, flexibility of elites and of systems of stratification, and probably others which were not discussed in this study--are not always directly related, in a one-to-one way, to the basic structural characteristics. They seem to exist both in more and less traditional societies, and to be more closely related to the cultural differentiation and interrelations between different subgroups which exist within the common framework of these different types of societies than to their broad structural characteristics. At the present state of our knowledge we cannot yet say what are the determinants of these different patterns of differentiation. Hence the identification of these characteristics suffices for purposes of this paper.

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(8) In these cases in which a complete rift between the new and old status groups developed, the degree of adaptability was much smaller, the extent of social disorganization and tension much greater.

Thus it may be said that the important factor was not the "abstract" compatibility between the structural principles of the traditional group, on the one hand, and modern forms of organization, on the other, but rather the extent to which the traditional structure, under the impact of these modern forces, generated conditions and processes which:

1. Facilitated the learning of new skills, patterns of behavior, and value orientations; and

2. Made possible some changes in the structural principles in the general direction of modernization, without undermining the basic cohesion and solidarity of the group.

The Persistence of Traditional Structures and Their Integration with Modern Ones

The preceding analysis implies that the structural changes which took place in immigrants' moshavim (and in other types of economic activities), the acceptance of criteria of universalism, specificity, and achievement, were not not complete in all spheres of life. In other words, the old social groups and structures did not altogether vanish, but retained--to a different extent in different moshavim--some strength. There are several successful and flourishing moshavim in which the traditional pattern is still prevalent. But whatever the degree of prevalence of this pattern, some features were found to be common to almost all these settlements.

1. Family and kinship relations remain more extensive, wider, and more impelling than in modern sectors. The family as a group continues to play some role in the economic sphere (i. e., to hold some common property, to recognize the binding forces of mutual obligation) and in the political and cultural sphere (i. e., it became one of the main informal media through which political influence and direction could be exerted). Considerations of family and kinship welfare are still important in the making of economic and political decisions. In relation to other social groups these considerations have much greater importance than in the more modern sectors of Israel.

2. The same can be said, in a general way, of the more traditional elites, especially in the fields of cultural and religious life.

3. The older patterns of authority are still holding, to different degrees, in various spheres: in intergenerational relations (e. g., in the relative acceptance by youth of the authority of elders at least in some areas of cultural and religious life, in family life, and in considerations for family welfare, etc., and in some moshavim even in the visible predominance of the traditional elite in political life and in the mediation of relations with the absorbing society).

The interesting and significant fact from the point of view of our discussion is that despite these structural factors the immigrants in these moshavim and in other groups showed themselves capable of performing without serious disruption various modern tasks in the economic and, to some extent, even in the political sphere. In other words, they apparently maintain simultaneously two different patterns of behavior and social organization--although each pattern predominated in a different degree. The question may be asked: how was it possible to maintain simultaneously different patterns of organization without disrupting any of them? One could, of course, answer that to some extent even in the economically most advanced societies social spheres can be found in which more particularistic, ascriptive, and diffuse orientations prevail. But

this does not fully answer our question, since in the moshavim the scope of such orientations is much wider than in other modern groups. This peaceful coexistence of the patterns of social action seems to be due to the following factors:

The two spheres of social action are segregated in definite ways avoiding intrusion of one into the other. Thus, within the work situation itself great stress is usually laid on competence and achievement, and considerations of family, etc., are not allowed to interfere. Such considerations might constitute goals to which some of the economic activity is directed, as demands on one's surplus earnings, but not as basic constituents of the structuring of the economic process itself. This situation seems to be exactly the opposite of that which was found to prevail for instance in modern Chinese enterprises.[9]

The relations between these two spheres are maintained by specific interlinking spheres, which became fully institutionalized in the society. Good examples of such interlinking activities and organizations are provided by the various committees of a moshav in which old and young alike tend to participate, although in different committees to different degrees; by special cultural and festive occasions, etc. The main characteristic of these "interlinking spheres" is that they help to organize in an order of definite priorities the relations between the traditional and the modern sector in a manner which emphasizes their mutual relations without negating either of them.

These interlinking spheres are, of course, closely connected with the relative flexibility of status criteria and overlaps of the different status groups. This makes possible the peaceful coexistence of different strata of society, with different value orientations.

This coexistence is possible because of two additional factors which developed in successful moshavim or among those immigrants who made the required adaptation. The first is the gradual development of a status image oriented towards both the traditional and the modern sphere attempting more or less consciously to integrate the two. Thus the structural segregation of these two spheres is not associated with a total psychological and socio-psychological separation into two different personality types, the traditional and the modern. On the contrary, there developed among most of these immigrants some awareness and acceptance of the existence of these two spheres. Naturally enough different persons emphasized each of these spheres to a varying degree. But the important fact is the almost all-prevading awareness of their coexistence, and hence also the development--or maintenance--of basic common solidarity and communal identification which bridges over the differences of various groups. These developments were certainly facilitated by the leadership pattern developing in the moshavim.

Finally, one more important aspect of this development must be examined: the influence of the government and its economic policy on the economic development of new immigrants in general and the moshavim in particular.

The coexistence of these two spheres of social action among the new immigrants is made possible, in the widest context, by some of the basic tenets of governmental economic and social policy. Most of these activities are related, in one way or another, to the economically developing section of the state. The government or some public body closely connected with it finances many enterprises of immigrants, controls them--directly or indirectly--and sets up the basic economic framework in which they work. Thus wage levels, basic problems of investment policy, etc., many subsidies, etc., are either directly fixed, or greatly influenced by government activities. This affects the immigrants'

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(9) See Levy, The Rise of the Modern Business Class in China, op. cit.

problems of adaptation and economic development in two interconnected ways. First, social welfare--e. g., minimum wages, housing needs, etc.--occupies an important part among the considerations of the government. In this way the government itself affords some basic economic security within which the immigrants' development may take place. Within this framework the immigrants can find a place more easily for some of their traditional social structures than if they were entirely thrown on their own resources in an open market. The government also minimizes some risks of the immigrants by tying their investment to the broader policy of the various settlement agencies. This also enables the maintenance of some "wider" economic relations within the family, and the small family unit is not entirely independent and completely dependent upon its own resources and at the mercy of the open market.

Secondly, the government (or other public body) may provide the immigrants, through its various enterprises, with guidance and help in their transition to new types of economic activities and time orientations. As most of the long-time measures and problems of economic development are closely connected with various government activities and policies, the adaptation of the immigrants to new organizational skills and the new time perspective may be greatly facilitated and made gradual.

But it is important to note that the greatest extent of economic adaptability and development is found not in the settlements entirely run by various outside officials, but in those in which the immigrants themselves manage their economic unit, with the help and guidance of public agencies which also provide the basic framework of their activity. Thus the best results are obtained not by governmental economic management, but by the encouragement of the immigrants' own economic initiative through the various frameworks established by the economic and social policy of the government and other public agencies.

I believe that without the general framework of the social and economic policy of the government one cannot understand the possibility of some sort of symbiosis between the "traditional" social structure of the immigrants and the more modern setting--a symbiosis which ensures the immigrants' adaptation to many of the new economic and political tasks. Because of this framework some aspects of the traditional structure become assets in the adaptation to the new tasks and therefore minimize the strain of transition and social transformation.

Conclusions

The analysis presented here has been based on limited and specialized material and circumstances. But it may nevertheless throw some light on the general problem of adaptability of "traditional" social groups to modern tasks. Some of the insights gained here on the role of family structure, or the development of types of leadership and stratification, could be used as hypotheses in other settings. The case of Japan is very interesting in this context, since it shows some broad similarities in these spheres.[10] An investigation of the role of extended family relations and of habits of specialization, derived from the caste tradition, in the development of Indian industry might produce further corroboration of these relations.

Moreover, in most post-colonial societies a trend of growing governmental interference in economic enterprise can be observed, and in most of these countries a policy of "welfare" planning, etc., seems to be in the ascendancy.

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(10) See Levy, "Contrasting Factors in the Modernization of China and Japan", op. cit., and T. Parsons, Essays in Sociological Theory, Glencoe, 1954, Ch. 13.

While such a policy may often stifle all independent economic development it remains true that it changes the basic aspects of the economic structure, with respect to investment policy and risks, regulation of the price system, of the market, development of new trained personnel, etc. All these points may be of crucial importance in influencing the whole problem of adaptability of traditional social structures to modern economy and they could bear, it seems to me, a detailed comparative investigation.

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ASPECTS OF LAND TENURE AND ECONOMICS IN A NORTH INDIAN VILLAGE*

Introduction

The following study of land tenure and related economic problems in a north Indian village was part of a larger research project carried on by the writer and a group of Indian student-assistants during a seven-month period between November 1952 and May 1953. One purpose of the project was to obtain baseline data in a single village within the Delhi community project area (covering 100 villages) prior to the start of an action program, so that it would be possible later on to assess the effects of the program upon the community. Field work took place during a crucial period when a new land consolidation program was being instituted in the village; this made the study of land tenure particularly pertinent.

Land tenure is apt to be considered the province of an economist rather than an anthropologist. But since the latter generally works on a more microscopic scale within a particular village community than does the economist (who proceeds for the most part on a nationwide, regional, or municipal basis), the anthropologist may be able to reveal relationships between local social patterns and the land tenure system which might perhaps escape those who work on a larger scale. We tend, for example, to think of castes as forming rather homogeneous units, and they are so described, at least by implication, in much of the literature. But the present study shows that even in a small village dominated by a single proprietary agricultural caste, namely the Jats, there is a great range of variation within the caste with regard to socio-economic status, land holdings, etc. In this paper we will be concerned with land tenure, population pressure, and economics in relation to the social organization of a north Indian village.

The village Rampur, which forms the focus of this study, is located about 15 miles west of Delhi in an area of high population density and intensive agriculture. Its selection as the community for study was determined by various considerations: Rampur is in the upper middle of the population range of the 100 villages in the area, it has a good representation of different castes[1] and occupations, and is accessible to New Delhi, despite a two-mile stretch of

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* This study was part of a larger study of Rampur village in Delhi District carried out by the writer between October 1952 and June 1953, under the auspices of the Evaluation Organization, National Planning Commission, Government of India. The data were gathered with the aid of my research assistant, Mr. Harvant Dhillon. I am also grateful to Dr. Victor Barnouw, Research Associate at the University of Illinois, for his editorial assistance in preparing the manuscript for publication.

(1) In making a comparative study of sample villages in five regions of India and Pakistan, based primarily on 1911 Census data, McKim Marriott found that an average of nine castes was represented in Upper Ganges villages, as contrasted with an average of fourteen in Coromandel and seventeen in Kerala villages. (His Upper Ganges group came mainly from Uttar Pradesh). Twelve castes are represented at Rampur. See McKim Marriott, Caste Ranking and Community Structure in Five Regions of India and Pakistan, Ph.D. thesis, typescript, University of Chicago, Department of Anthropology, 1953.

dirt road or cart track. In its agricultural patterns it is characteristic of the villages of the region. Rampur is situated in the bangar, as the upland area west of Delhi is known. This is a relatively rich agricultural area with a variety of crops, principally wheat, millets, sugar cane, and pulses. A portion of the land produces two crops a year with the aid of canal and well irrigation.

The population of Rampur has grown from 636 in 1905 to 1095 in 1952.[2] The village lands, however, have remained the same and must support this increased population along with the animals.[3] While some men have been able to find jobs outside the village, this has not been sufficient to eliminate the heavy pressure on the land.

Rampur consists of a habitation site surrounded by agricultural lands, with a total area of 784 acres. The population is divisible into 150 families, of which 78 are Jat families. The Jats own all the land in Rampur and constitute a corporate proprietary body which is responsible for payment of the revenue. There are eleven other castes, all of which, except for the Brahmans, have lower status than the Jats. They are living at Rampur, theoretically at least, at the sufferance of the latter. The non-Jat families include: 15 Brahman, 20 Camar (leather worker), 10 Bhangi (sweeper), 7 Kumhar (potter), 5 Jhinvar (water carrier), 4 Dhobi (washerman), 4 Khati (carpenter), 3 Nai (barber), 2 Chipi (tailor or calico printer), 1 Lohar (blacksmith), and 1 Baniya (merchant).

These caste groups are related to one another in a network of traditional obligations and exchanges of goods and services, known as the jajmani system. Under this system, each caste group is expected to give certain standardized services to the families of other castes. A Khati (carpenter) repairs tools, for example, a Nai (barber) cuts hair; but they do not necessarily perform these services for everyone. Each man works for a particular family or group of families with which he has hereditary ties. His father worked for the same families before him, and his son will continue to work for them, the occupation or service being determined by caste. The family or family head served by an individual is known as his jajman, while the man who performs service is known as the jajman's kamin. The jajman compensates his kamins for their work through periodic payments in cash or grain, made throughout the year on a daily, monthly, or bi-yearly basis. Kamins may also receive benefits such as free food, clothing, and residence site, the use of certain tools and raw materials, etc. To William H. Wiser, who made the first systematic study of the jajmani system, these concessions represent the strength of the system and are more important than the money payments.[4] Despite the increased use of money in recent years, the peasants nowadays tend to prefer grain-payments to cash, since grain prices have risen so enormously in the past decade. The rules governing the jajmani system in Rampur have been codified in a document called wajib-ul-arz, which specifies the kinds of work done by the different caste groups and the rates of remuneration. The provisions of the wajib-ul-arz have legal effect, for British legislation continued to support these customary rules under civil law.

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(2) The growth of Rampur's population may be traced in the records of the village patvari, or accountant, where the following figures are given: 1901--636; 1911--560; 1925--570; 1929--570; 1931--645; 1940--645; 1951--965.

(3) Rampur's animal population includes 103 bullocks and bulls, 38 cows, 23 goats, 7 lambs, 16 donkeys, 1 mule, and 1 camel.

(4) William Henricks Wiser, The Hindu Jajmani System, Lucknow, 1936, pp. 6-11. See also Oscar Lewis and Victor Barnouw, "Caste and the Jajmani System in a North Indian Village", Scientific Monthly, in press.

Despite the proximity of Rampur to Delhi, the nation's capital, and despite modern technological changes, India's five-year plans, and the influence of reformist movements and political ideologies, the jajmani system is still functioning in the village. However, changes are taking place. The Camars have stopped fulfilling some of their jajmani obligations toward the Jats, such as the removal of dead cattle. The Brahmans have lost their priestly functions. The Dhobis, who formerly depended completely upon their local jajmans, now have customers in Delhi as well. The Khatis and the Lohar are abandoning their traditional trades. The Nais have lost their roles as marriage go-betweens as well as some of their opportunities as barbers. Some of their former jajmans now shave themselves; their wives shampoo their own hair. Most of the lower caste villagers--and many of the Jats--are in debt. Some have been led to change their occupations and have gone to Delhi to look for work. Technological changes and the increasing land fragmentation have reduced the need for help in agriculture among the Jat families. Meanwhile, the Arya Samaj (a Hindu reformist movement) and some of the political parties have preached, with some effect, against caste restrictions. All of these factors have led to a loosening of jajmani ties and obligations, accompanied by the growing importance of a money economy.

The Jats and Brahmans are the principal agriculturists in Rampur, for it is only members of these two castes who cultivate with oxen-and-plow and have the status of permanent cultivators in the village. Until recently none of the Jats grew vegetables, for that was considered a low caste occupation. In 1925, however, under the influence of Arya Samaj preaching, one of the Jats began to grow melons. Today there are thirty Jats who grow melons, and nine Jat families which have taken to raising potatoes. Vegetable-gardening is also carried on by five Jhinvar and four Camar families, one Kumhar and one Brahman family. The lower-caste vegetable-growers have no plows or oxen but practice hoe-cultivation, irrigating their lands from shallow pit wells. Lower caste men, particularly the Camars, also work as occasional day-laborers for the Jats.

Although all Jats own land, twelve Jat families do not cultivate, and ten Brahman families do not do so. This leaves 66 Jat families engaged in agriculture, plus five Brahman, five Jhinvar, four Camar, and one Kumhar: a total of 81 families directly dependent upon the land.

We estimate that 38 out of 69 non-cultivating families still depend, at least to some extent, upon the grain-payments made through the jajmani system: 16 Camar, 8 Bhangi, 6 Kumhar, 3 Nai, 2 Khati, 2 Dhobi, 1 Lohar. Some of these families have jajmans in neighboring villages. This makes it difficult to determine accurately how the villagers are supported, for we cannot consider Rampur in isolation. Rampur jajmans also have kamins from neighboring villages.

Many families have sources of outside income. Among the Jats this applies to 57 men from 42 households. These 42 households, therefore, are not solely dependent upon agriculture. Twelve Jats are teachers, 15 are in the Army or police service, 15 are working as clerks, drivers, or peons in the post-office, or in mills or factories, and 10 work in a nearby ordnance plant. Five receive regular pensions. It is interesting to note that of the fifteen Brahman households, as many as ten have sources of outside income. Five Brahmans are teachers, seven work at jobs in mills, ordnance plant, etc. One is a tailor, and one sells milk (the latter two are not included in Table I, since they do not have regular incomes).

Four of the Camar families have work outside Rampur. One has a regular income as village caukidar (watchman). Three Camar families do weaving, four have taken up guava gardening on a contract basis, and some raise cattle to supplement their incomes. Most of the rest work as occasional day-laborers in the fields. Two Khatis are teachers. Four Bhangis are employed. Two Bhangis and two Kumhars have jobs in Delhi. Some Kumhar families do weaving and keep donkeys

to supplement their income. One Dhobi has a job in the ordnance plant. Two Nais are employed, one as a teacher, the other as a truck-driver. The Baniya in Rampur has a military pension.

Sixty-nine of the 150 families in the village have a total average monthly outside income of over 9000 rupees. The distribution of this income by caste is shown in the following table:

Table 1.

Average Monthly Outside Income by Castes and Number of Families, Rampur, 1953.

Caste	Total Number of Families	Number of Families with Outside Income	Average Monthly Income per Family	Total Outside Income
Jat	78	42	145	6077
Brahman	15	10	142	1421
Camar	20	5	53	265
Bhangi	10	4	72	289
Kumhar	7	2	45	90
Jhinvar	5	0	0	0
Khati	4	2	250	498
Dhobi	4	1	80	80
Nai	3	2	115	230
Chipi	2	0	0	0
Lohar	1	0	0	0
Baniya	1	1	100	100
Totals	150	69		9050

It can be seen that over 80% of the total outside income of the villagers is earned by two castes--the Jats and the Brahmans. They have a higher proportion of employed families and a higher average monthly income than do the lower castes. The only exceptions to this general trend are the Khatis and Nais. The difference between the average monthly income of the Jats and Brahmans as against that of the Camars, Bhangis, and Kumhars is striking.

The fact that over 50% of the Jat landholding households have at least one family member employed outside the village suggests the inability of the limited land-base to adequately support the Jats, much less all of the villagers. Most of the employed Jats come from cultivating families; only eight of the twelve non-cultivating Jats are employed. The range in income per family among the Jats is great--from 15 rupees per month to 600 rupees per month, the latter being earned by three members of a single household.

The relationship between outside income, landholding, and other socio-economic indices was analyzed with the aid of a socio-economic point scale devised for the qualification of each of the following traits: land-ownership, land cultivated, housing, outside income, highest school grade completed, and school attendance. Each family received a point score for each trait and also a total score. It was found that the families clustered into three socio-economic groups, which we have designated, from lowest to highest, as Group I, with sub-groups Ia (1-3 points) and Ib (4-15 points), Group II (16-24 points), and Group III (25-33 points). See Table 2.

Table 2.

Percentage Distribution of Jats and Non-Jats in Socio-Economic Groups, Rampur, 1953

Group	Jats	Non-Jats	Total for the Village
Ia	0	41.66	20
Ib	56.4	56.95	56.6
II	37.17	1.38	20
III	6.41	0	3.3

In Table 3 we see that size of landholding and amount of outside income are positively correlated with the total socio-economic score as measured by our scale. Whereas 80 per cent of the families in Classes II and III are employed, only 32 per cent of those in Class Ib are employed.

Table 3.

Distribution of Average Monthly Outside Income and Land Holdings by Socio-Economic Groups Among Jats, Rampur, 1953

Socio-Economic Group	Number of Families	Number of Families with Outside Income	Total Average Outside Income (Rupees)	Average Income per Family Employed	Total Land Owned (in acres)	Average Land per Family Employed (in acres)
Ib	44	14	1283	94.5	257.2	3.3
II	29	24	3793	156	319.2	9.7
III	5	4	1001	250	141.5	20.4
Totals	78	42	6077		717.9	

The relationship between size of holding and outside income is analyzed in Table 4. We find that both small and large landowners are distributed among those with outside income as well as among those without outside income. Some trend is suggested, however, by the fact that approximately 60 per cent of the 36 families with the smallest holdings have outside jobs.

Table 4.

Size of Landholding and Average Monthly Outside Income Among Jats, Rampur, 1953

Size of Holding (in bighas)	Number of Families Without Outside Income	Number of Families With Outside Income	Average Monthly Outside Income per Family (in Rupees)
Less than 10	3	4	262
10-29	12	17	118
30-49	8	6	126
50-69	7	7	101
70-89	4	2	196
90-109	1	2	140
110-129	0	3	252
130-149	0	1	125
230-249	1	0	
	36	42	

Payment of the Revenue

The definition of property rights in an Indian village is largely determined by who pays the revenue in it. Rampur is known officially as a "modified pattidari" village, which means that part of the village land is owned in common and part by individuals whose rights can be traced genealogically. Baden-Powell coined the term "joint village" for a type of north Indian village in which the land is assessed by the government as though it were one estate, the entire village being held accountable for the revenue payment in a lump sum. Rampur is a "joint village" of this type, having, among other characteristics of the ideal "joint village", an area of waste land owned in common by the proprietary group.[5]

Taxes are fixed at a certain period and remain the same until the next "settlement" (the last such settlement for Rampur took place in 1909, when the village revenue was fixed at 1397 rupees; but the land consolidation program now in progress will soon bring about a new settlement). The Jats pay the revenue to the government as a unit--not individually--through two village subdivisions based upon kinship, known as panas. These units are in turn subdivided into groups known as thollas. Each pana has one tholla bearing the pana name and another tholla with a different name, as follows:

Pana Dhan Singh	Pana Harditt
Tholla Dhan Singh	Tholla Harditt
Tholla Teka	Tholla Jaimal

Tholla Dhan Singh consists of a major patrilineage divided up into three sub-patrilineages, in which all trace descent from a common ancestor. In Teka, also, there is one major patrilineage, in which all members trace descent from a common ancestor. Tholla Harditt, however, consists of two maximal patrilineages, and Jaimal of three maximal patrilineages.

The number of families in the village and the amount of village lands are divided almost equally between the two panas. Pana Dhan Singh has 40 families; pana Harditt has 38 families. Each pana has approximately 12 hals[6] or 375 acres of land, and each pays the same amount of revenue. The pana-tholla organization applies only to the Jats, plus a few Brahmans who have been invited into it by the Jats as their occupancy tenants. The other castes are not represented. Each pana has a headman, or lambardar, through whom revenue matters are handled. This function of the lambardar existed before the establishment of British rule, according to Ibbetson, who spent more than eight years investigating the revenue system of the Karnal District near Rampur.[7]

The 784 acres of Rampur appear on the revenue books as one estate, with a single tax. The tax is paid in two parts, one part being paid by each of the lambardars. According to the law, the lambardars are responsible for the taxes of their pana. Theoretically, it is the lambardar who pays the entire tax for the pana of which he is titular head. However, the villagers have a different concept of the tax system. They see it as a purely individual matter, each man paying the tax on the land he individually owns and which is his through inheritance. The villagers do not see that the lambardar has responsibility for any

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(5) B. H. Baden-Powell, Village Communities in India, Scribners, 1899, p. 15.

(6) Hal (literally plough): a measurement of land, about 31.25 acres.

(7) Denzil Charles Jelf Ibbetson, Report on the Revision of Settlement of the Panipat Tahsil and Karnal Parganah of the Karnal District, 1872-1880, Allahabad, 1883, p. 92.

taxes but his own. In practice, each land owner feels himself responsible for the tax on his plots, and he pays the annual revenue to the lambardar, who in turn pays the total sum of his pana's taxes to the government. So far there has been no opportunity to test the villagers' concept of the tax system at Rampur. As yet no individual land owner has refused to pay his tax.

There are two principal types of land holdings in Rampur: common lands and private lands. Both of these terms require some qualifications. The common lands (samilat) are held in common only by the Jats and not by the other castes in the village. Moreover, rights in the use of these lands are portioned out in certain ways, as will be seen below. Common lands, which are non-taxable, cover only about 5% of the village lands.

The second main type of land holdings at Rampur is private agricultural land, rights to which are traced genealogically and recorded in the books of the village patvari, or accountant. These records contain the size, name, and location of the lands owned by each individual and the amount of tax due. About 95% of the village land is private land. But private should perhaps be put in quotation marks, for Indian peasant attitudes towards private agricultural lands are not quite the same as a Westerner's. Ibbetson, in the work already cited, discusses this difficulty: "The villages of the Tract have, for the purposes of settlement, been classified as follows: - 64 held wholly in common by the body of owners (zamindari); 22 divided among the several branches of the community according to ancestral shares (pattidari); and 250 held in severalty by the individual households, the holding of each being quite independent of any fixed scale (bhayachara). But this classification is practically meaningless...it is, as a rule, impossible to describe the tenure of a village in a word, or to classify it satisfactorily under the recognized headings...[I believe] property in severalty, based solely upon actual possession, to have been entirely a creation of our own; that before our times the breaking up of land gave the cultivator a right to hold that land undisturbed so long as he paid the revenue on it, but gave him no further rights; and that it gave him this much whether he was an owner or not. In old days, members of the proprietary body returning to the village after an absence of even half a century or more were admitted to their rights without question; and there is still a strong feeling against rights being extinguished by absence from the village."[8]

Common Lands

In north Indian villages the common lands have a traditional function. They serve primarily collective purposes, such as the grazing of cattle and the provision of wood, for they generally contain a wooded area. However, the common in Rampur is small, comprising only 5% or 41.25 acres of the total area of the village. This is not unusual, although in nearby Mundka almost 50% of the village land is in the common. Most of the land in Rampur is cultivable, and the demand for land is great--which may help to explain the smallness of the common. The common lands in Rampur are too limited for grazing, and there are only 36 privately owned trees in the whole village, each of which has a definite monetary value affixed to it, recorded in the patvari records. Thus the common is now something of an anachronism, having collective tenure without collective functions. The absence of a communal grazing area and sources of wood adds to the burdens of the villagers. The lack of a wood supply has forced them to use cow dung for fuel; hence they can return little of it to the soil as fertilizer. Enough fodder must be raised to support the cattle, which are needed for agricultural purposes.

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(8) Ibbetson, op. cit., pp. 95-97.

Rights to the use of common lands are based upon the amount of land each Jat holds as private land. One might expect the common to be a source of village unity, but here the rights of so many people in so little land have led to bitter quarrels, and they have been a source of dissension. A distinct departure from the traditional functions of the common has been the cultivation of small sections by those Jats whose private lands border upon it. This has annoyed those who were not located where they could extend their plots.

Despite their deficiencies, the common lands do provide what little room there is for expansion in Rampur, primarily for the building of new houses and roads. Although the major part of the common consists of uncultivable wastes which cannot serve for agriculture nor for grazing, the genealogically traced rights of each of the Jats in the common lands are carefully guarded. Despite their small size, the latter are divided into several types, as follows: (1) the village common (samilat dhe); (2) pana common lands; (3) tholla common lands; (4) the village habitation area (abadi dhe).

1. The Village Common. This comprises the largest of the communally held lands, consisting of 37.1 acres, or 178 bighas and 8 bisvas.[9] All the Jats of Rampur have rights in the use of this village land, which lies scattered throughout the area outside the central habitation site. It is further subdivided as follows:

a.	cultivable lands (mazroha)	
(1)	canal-irrigated (nahri)	4.6 acres
(2)	unirrigated (barani)	3.5 acres
	Total	8.1 acres
b.	uncultivable land (ghar mazroha)	
(1)	land left fallow for four harvests (banjar jadid)	1.25 acres
(2)	land left fallow for more than four harvests (banjar kadim)	6.5 acres
(3)	waste and grazing land (ghar mumkin)	22.5 acres
	Total	30.25 acres

The cultivable lands were never divided among the people as were the habitation area and the pana and tholla lands. However, the Jats whose private plots bordered on the common expanded their cultivation plots onto the latter, even to the extent of filling in some of the water pools and the banks of the village pond. Some years ago the families which were not able to expand onto the common brought this problem to the courts, specifying who had appropriated land and the amounts taken. They won the case and forced the others to cease their illegal cultivation. For some time this land lay fallow, but after five or six years the former transgressors began to inch onto it again. Altogether 8.1 acres have been brought under cultivation in this way.

The non-cultivable lands of the village common consist of the following: (1) the village pond; (2) small pools or tanks; (3) land occupied by the school

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(9) For the convenience of the western reader we have converted the local Indian measures of bighas and bisvas into acres. We have used 4.8 bighas for an acre in accord with the local patvari records in this village. Most land records are in bighas and bisvas. The latter is one-twentieth of a bigha. The conversion of bisvas into our acres gives us only tenths or hundredths of an acre and seems too small to be worth handling. However, from the point of view of the villagers, each bisva is precious. The very act of converting bighas and bisvas into our acres does some violence to the psychology of the villagers.

and school grounds; (4) the land occupied by two pana caupals, or men's houses; (5) the land occupied by four houses other than the caupals; (6) the roads which pass through the village; (7) sandy or muddy spots which cannot be worked; (8) land near the village used for the storage of manure.

These lands cover the larger part of the village common--30 acres out of a total of 37. None of this land has been officially distributed among the Jats. The only case of this sort occurred some 15 years ago, when the Jats, through the village panchayat, or council, decided to distribute what they thought to be 2.5 acres of the village common. This small portion lay on the border of the village habitation area, and was used exclusively by the people of pana Harditt as a storage place for manure. However, when the patvari record was examined, it was discovered that at the time of the settlement of 1909 one of the Jats, with the connivance of the patvari, had managed to have .6 acre of the section of 2.5 acres registered to his own name. Therefore there remained only 1.9 acres for distribution. These plots were, however, never officially registered, because the patvari wanted 30 rupees for the registration, which the villagers refused to pay. As has been noted, some houses have been built on the village common. In one of these cases, a Jat who built a new house on his own private land managed to use a small piece of common land also. The villagers did not realize it at the time, but now suspect that the Jat bribed the patvari.

2. Pana common lands. Each pana has some land of its own, and so has each tholla. Pana Dhan Singh, whose members hold 375 acres of land, has 1.5 acres of common land. This is in addition to their rights in the village common. The pana land is some distance away from the village habitation area, and only .4 of an acre is cultivable. This small piece, which was once part of a pool, is now cultivated by three separate families whose private holdings adjoin it.

3. Tholla common lands. The two thollas of pana Dhan Singh each possess their own special tholla lands in addition to their pana land. Members of Teka tholla, for example, have .6 acre. Although this land is referred to in the patvari records as common land, and is therefore exempt from taxes, the village panchayat divided it among the members of Teka tholla, each member receiving about .1 acre (11 bisvas).

There is an interesting case concerning the rights of one member of Teka tholla in this land. After the distribution, Jat Ram allowed two carpenters to build their houses on his share of the land and accepted money from them. However, since no land may legally be sold to non-Jats, it could not be transferred as having been sold. Instead, Jat Ram tried to have it transferred as hebah, or charity. His appeal for this action was accepted by the court officer (tehsildar) but turned down by the Deputy Commissioner. Nevertheless, the two carpenters had already built their houses on the land, and after having given money to Jat Ram, they continued to live there.

The members of Dhan Singh tholla have a larger area of common land than those of Teka tholla. Tholla Dhan Singh has 1.9 acres, which were divided among members of the tholla before the settlement of 1909. It is generally used as a threshing area, although .1 acre is occupied by the house of one member of the tholla.

4. The village habitation area. At each settlement, the limits of the habitation area are fixed. The habitation area or residential section of the village is excluded from the revenue system, and is therefore tax-free, in distinct contrast to the house site tax found throughout much of the world. Since the area is tax-free, there is no necessity for the patvari to maintain a record of the individual site holders. It is said that the individual sites were plotted on a map during the settlement of 1880, but at present there is no exact record of these holdings. The habitation area now consists of 15.8 acres.

However, settlement records show that it has steadily increased in size since 1842. Traditionally, it is a type of common land which differs from the others in that houses are constructed on it, as well as courtyards and other enclosures. In 1917 the reality of common holdings was put to the test in a court case, which the members of Teka tholla brought against all the other Jats in the village, demanding partition of the entire area. The court ruled against them, stating that although the residence area was traditionally land held in common by the landowners of the village, it was in fact held in severalty by the same land owners, who had occupied certain sites for generations. To partition the land on which their houses were built, the court officer said, would constitute a hardship for the inhabitants of the village, many of whom had occupied the same sites since its foundation. However, the court ruled that all the land which had become part of the habitation area since the settlement of 1880 was available for partition. Thus the members of Teka tholla received a small area lying just outside the former (1880) limits. This area, used for dung storage, was just what Teka tholla wanted. About fifteen years ago the remainder of the land which fell between the limits of 1880 and 1909 was divided among the remaining three thollas through action of the village panchayat.

All the non-Jats of the village live on land made available by the Jats and have only occupancy rights to their house sites. Many of the non-Jats have resided in Rampur as long as have the Jats themselves. But they cannot sell the land if they want to leave the village, as many are now doing, seeking employment in the cities. Recently, when a Camar wanted to leave the village, he pawned his house to a Khati for 1500 rupees, so as not to take a complete loss on its value.

Thus common land, which should traditionally be used for grazing, wood-collecting, etc., appears to have undergone the same divisions for private purposes as have the rest of the village lands. Officially, the four types of common land are still held in common and are not taxed. But the village common land not covered by water has been unofficially divided, at least in part, into individually worked agricultural land. The pana and tholla lands have also suffered divisions and are also used almost entirely for private ends. Finally, the village habitation site has been declared officially, in a court decision, to be land held in severalty, since it was divided by the simple fact of house-building, and therefore is used exclusively for private purposes. Even the non-Jats who live on land made available to them by the Jats have occupancy rights to their house sites, and although they cannot sell their sites, they can pawn them.

Private Land

The total number of acres of private land, on which revenue must be paid, is 717.4; with the exception of 4.2 acres, all of this is cultivable.[10] Changes have been taking place in the land use patterns stemming from the land pressure and other factors. There has been an increase in the number of individual holdings and a decrease in their size.[11] Moreover, landholders are afraid to rent out their land, because of the occupancy rights which may be gained by the renter.

There are two categories of privately owned land. The first is known as malik kamil, or perfect ownership. Holders of this type of land have rights in

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(10) According to the village patvari records, half of the cultivable land (340.2 acres) is canal-irrigated, but in reality only 1/6 of this land is canal-irrigated now, for the water supply has been reduced to about 1/3 of what it was at the time of the settlement of 1909, due to the greatly increased demand for water along the canal system.

(11) See Table 12.

the village common proportional to their private holdings. The second category is known as malik kabza, which entails posession of land without any rights in the common. The distinction between the two categories lies only in the question of communal rights. In both cases the owner is responsible for the revenue assessed on his land and is entitled to enjoy the full fruits of the land. In Rampur the majority of land ownership is of the perfect ownership type.

The basic division of land in Rampur, however, is that of family ownership. Traditionally, the villagers have held land as joint families, married brothers and their families living together and working their inherited land jointly. However, during times of economic stress or depression there seems to be a tendency for members of the joint family to split up their land into separate holdings.[12]

All the Jat families in Rampur own land, but although the village lands are divided equally pana-wise, they are somewhat unequal tholla-wise and very unequal family-wise, as may be seen in Table 5. Teka tholla is the group that is best off as far as land ownership is concerned, with only 12 families dividing 173.5 acres--giving an average of 14.4 acres per family. Tholla Dhan Singh is the worst off, with the largest number of families in Rampur (28), dividing 176.2 acres, and therefore having an average of only 6.3 acres per family. These averages are misleading, however, for there is great variation in the size of the individual family holdings within each tholla, as shown in Table 7.

In Teka tholla only one family has less than 4.2 acres, as compared with 24 families in the other three thollas who have less than that. Moreover, the largest landholding family in the village belongs to Teka tholla. This family owns 52.1 acres of land, although two married brothers and their families own half the land individually. Teka tholla seems to be the most conservative of the four thollas, and adheres more strongly to the traditional joint family pattern, a factor which helps to keep down the total number of families and the increasing division into smaller plots which has taken place among the other thollas.

It is also apparent from Tables 6 and 7 that tholla Dhan Singh is the least well off. It is the only tholla in which there are members holding less than one acre. In fact, 23 of its 28 families hold less than 10.8 acres per family, 15 of which have less than 4.2 acres.

Jaimal tholla, which has the greatest amount of land, is close behind Dhan Singh with 14 of its 22 families holding less than 10.8 acres of land. Harditt tholla has only 13 families with less than 10.8 acres. Therefore, tholla-wise, we can rate the families of Teka, Harditt, Jaimal, and Dhan Singh from best to worst off in that order, with respect to landholdings. The number of families in each tholla of course influences the amount of land each family can hold, and it must be remembered that the number of families per tholla differs greatly.

Some other aspects of land-ownership may be pointed out: 25 of Rampur's landholding families own less than four acres, while 29 families own between four and ten acres per family. In other words: 69% of the families own less than 10 acres, 21.6% own between 10 and 20 acres, and 8.8% own more than 20 acres. This last 8.8% of the families owns 27.7% of the total village lands.[13]

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(12) For a later discussion of this point, see under "Land Fragmentation".

(13) To put it in still another way: 72% of the Jat landholding families own less than 12.5 acres, while 57% cultivate less than 12.5 acres; 20% own and cultivate between 12.5 and 18.7 acres; and 8.8% own and cultivate over 18.7 acres, or more land than is considered ideal for one team of

Table 5.

Distribution of Private and Communal Land Holdings by Cultivated and Uncultivated Areas, 1952, in acres

		Cultivated Area					Uncultivated Area		
Type of Land	Total Area	Unirrigated Land	Canal	Well	Well and Canal	Total	Banjar	Ghar Mumkin	Total
Private Holdings	716.8	339.9	340.3	16.5	16.5	712.2	3.1	1.5	4.6
Communal Holdings									
1. Village	37.2	3.5	4.6			8.1	6.6	22.6	29.1
2. Pana	1.4		.4			.4	.3	.7	1.0
3. Tholla	2.6						2.4	.2	2.6
Village Habitation Area	15.8							15.8	15.8
Area Covered by Canals	4.7							4.7	4.7
Government Area	5.1							5.1	5.1
Total Village Land	784.0	343.0	345.0	16.5	16.5	721.0	12.0	51.0	63.0

Table 6.

Land Distribution by Village Sub-Division (Panas and Thollas) and by Families, 1953

Village Sub-Divisions	Number of Families	Number of Acres	Average Number of Acres per Family
Pana Dhan Singh	40	349.7	8.7
Tholla Teka	12	173.5	14.4
Tholla Dhan Singh	28	176.2	6.3
Pana Harditt	38	362.4	9.5
Tholla Jaimal	22	219.2	9.9
Tholla Harditt	16	143.2	8.9

Table 7.

Size of Land Holdings by Families Within Thollas, 1953

Size of Holding (acres)	Number of Families				
	Teka	Dhan Singh	Jaimal	Harditt	Total No. of Holdings
Less than 1 acre	0	3	0	0	3
1 - 4	1	12	4	5	22
4 - 10	4	8	9	8	29
10 - 20	4	3	8	2	17
20 - 40	2	2	0	2	6
over 40	1	0	0	0	1

Fourty-four families, or 57% of the Jats, own less than 12.5 acres. This is considered sub-standard, not enough to support an average family with a team of oxen. Only 15 families (19.23%) cultivate what is considered to be a good amount of land (13-18 acres), while seven families (8.96%) cultivate more land than is considered good for one team of oxen.

Factions

The differences in the tholla groups with regard to land holdings are of interest in connection with the village factions. A study of the factions in Rampur showed the importance of these groups in the power structure of the village. The factions are primarily kinship units consisting of one or more extended families (kunbas). The role of kinship in faction composition may be seen by the fact that there is not a single case of brothers belonging to separate factions and only one case of first and second cousin families in separate factions. There are six Jat factions--three in each pana. Their number within the tholla increases progressively as we go from the smallest to the largest tholla. There is one faction represented in Teka tholla, two in Harditt, three in Jaimal, and four in Dhan Singh. In terms of the tholla composition of factions, we find that three factions consist of families from one tholla each and three consist of families from two thollas.

All factions operate as more or less cohesive units on ceremonial occasions, particularly births, betrothals, and marriages, in court litigations, in the operation of the traditional caste panchayats, and in recent years in the district board, state, and national elections. Moreover, all of the factions have one or more of their own hookah smoking groups which serve as social centers in which there is daily face-to-face contact. Jat factions have a few special functions. They act as units in cooperative economic undertakings such as money lending and the renting of land, and also in quarrels over land, especially village communal lands. For these activities a faction must have at least some well-to-do families with a surplus of land and money to rent or lend to its poorer members. It must also have sufficient economic resources to fight expensive and lengthy court cases.

Members of hostile factions will not attend each others' ceremonial celebrations, will not visit each others' homes, and as a rule will not smoke the hookah together, except at the home of a member of a neutral faction. In panchayat meetings the representatives of hostile factions can be counted upon to marshall vicious gossip about rivals. However, direct attack in public is rare. Instead, indirection is developed to a fine art. It is to be noted that members of hostile factions generally do not cease talking to one another, and are polite. This allows for the possibility of improving relations or at least joining up temporarily with one hostile group to fight another. Factions which enjoy the reputation of being relatively neutral and having friendly relations with all groups are the most influential in the village.

There are some occasions, though relatively few and far between, when members of different factions come together, despite their differences, and unite for some common action. The major occasions are funerals, building of village wells, the cleaning of the village pond (twice in the past forty years), the repair of sub-canals for irrigation, and certain holidays such as Holi and

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oxen. 15.38% of the Jats either rent out their land, because they have so little that it is not worthwhile cultivating, or else they have outside occupations. Four families cultivate less than one acre. While all the Jats own land, 12 families or 15% cultivate none; 72% own between .2 and 12.5 acres, but only 57% cultivate between .2 and 12.5 acres.

Tij. Moreover, there is a tradition of presenting an appearance of unity to the outside. For example, if two men of hostile factions have their daughters married in the same village, whenever either of the men visits that village he must visit the daughter of the hostile faction and pay the customary one rupee to symbolize the fact that she, like his own daughter, is a daughter of the village.

The six Jat factions (which are here referred to as 'A', 'B', 'C', 'D', 'E', and 'F') show some significant differences in a number of important social and economic characteristics. These may be illustrated through the use of the socio-economic point scale discussed earlier in this paper.

We can establish the ranking of the Jat factions by adding up the total number of points obtained on all of the scores by the families in each faction and dividing by the number of families per faction. The ranking is shown in Table 8.

Table 8.

Rank Order of Jat Factions on Socio-Economic Indices, Rampur, 1953

Faction	Total Socio-Economic Score	Housing	Land Owned	Land Cultivated	Outside Income	Highest Grade Completed
A	1	1	6	6	1	2
D	2	2	1	1	5	5
C	3	3	2	2	6	1
E	4	4	3	3	4	4
B	5	6	4	4	2	3
F	6	5	5	5	3	6

Beginning with the total socio-economic scores we see that 'A', 'D', and 'C' rank highest and 'E', 'B', and 'F' lowest. The correlation between the total scores and the separate scores is very high in housing and quite high in most of the other indices with only a few exceptions. In short, 'A', 'D', and 'C' are clearly the wealthiest groups. It is noteworthy, however, that the basis of the faction socio-economic strength differs considerably. Group 'A', which ranks first on total score, ranks sixth or last on land owned and land cultivated. But it ranks first on outside income and second in education. This negative correlation may be significant and may reflect a trend whereby the small landowners seek outside employment. The converse of this proposition is shown strikingly in the case of faction 'D'.

A more detailed examination of the land ownership picture reveals that Groups 'D', 'C', and 'E' are the largest landowners per family, and 'B', 'F', and 'A' the smallest. The total land of each faction and the average per family are given in Table 9.

Table 9.

Distribution of Land Ownership by Factions, Rampur, 1953

Faction	Number of Families	Land Owned (Acres)	Average per Family (Acres)
D	14	181.47	12.96
C	7	86.04	12.29
E	9	87.29	9.69
B	21	173.33	8.25
F	13	102.27	7.86
A	14	85.42	6.10

It can be noted that the rank order of factions for land owned and land cultivated per family is almost identical. In faction 'A', which ranks lowest, six out of fourteen families do not cultivate land, while in factions 'D', 'C', and 'E' all but one family (in 'E') are cultivators.

Table 10.

Average Monthly Outside Income by Jat Factions, Rampur, 1953

Faction	Number of Families	Number of Employed Families	Income (Rupees)	Average Income per Employed Family
A	14	9	1843	205
B	21	10	1781	178
E	9	4	602	150
F	13	9	940	104
C	7	2	195	98
D	14	8	716	89

In comparing the two above tables we are struck by the inverse relationship between landholding and amount of outside income on a faction basis. We have no specific information which would fully explain why the families in faction 'A' have so much higher incomes than those in faction 'D'. However, we know that the educational level of Faction 'A' is considerably higher than that of 'D'. Moreover, we have seen that the bulk of the non-cultivating Jat families are in faction 'A', and five out of six of these families have outside income.

Perhaps the most dramatic evidence for the socio-economic aspect of the factions emerges from a study of the renting and mortgaging of land. In five of the six factions not a single individual rents land out to other factions. Faction 'D', the only exception, has a surplus of land and rents out to 'B' and 'E' as well as to Brahmans and Camars. However, in principle, no faction will rent out land outside of its own faction if there is anyone within the faction who needs land. In the case of mortgaging, faction solidarity is even more striking. There has not been a single case in the last five years of land mortgaged outside of one's own faction. This is all the more significant in the face of the demand and competition for land.[14]

Oxen

The range of wealth within the Jat caste may also be studied in connection with the ownership of oxen. Oxen are necessary in cultivation and also represent items of prestige for their owners. However, only 46 of the Jat families have a team of oxen; 10 families have one ox, and 22 have none. Of the latter 12 are non-cultivators, renting out land, 4 cultivate less than one acre, and six cultivate between two and four acres.[15]

There has been a decrease in the number of oxen at Rampur. In 1909 the number of bulls and bullocks was 119; it rose to 125 in 1914 and then fell off to 109 in 1953. The decrease in the number of oxen may be related to the decrease in the number of cultivating families.

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(14) For a fuller account of the factions in Rampur, see Oscar Lewis, "Group Dynamics in a North-Indian Village: A Study of Factions", Economic Weekly, Bombay, Vol. 6, 1954, pp. 423-425, 445-451, 477-482, 501-506.

(15) In addition to the Jats, four Brahman families at Rampur have oxen. Three of these families have a pair, and one has a single ox.

The term hal is used for a team of oxen. Hal means plow, so a team is equated with a plow. Those who have only one ox speak of having half a plow. Most of the agricultural work requires a team, so that the eleven families who have only one ox must borrow another from a relative or a friend to do their work properly. Since it is felt that the proper amount of land necessary to cultivate with a pair of oxen is from 13 to 18 acres, it is clear from Table 11 that only 16 families with a pair cultivate this amount of land. Surprisingly enough, 15 families with a pair and two with one ox are families who are cultivating less than 10 acres. In other words, about 28% of the families who own oxen have oxen which theoretically should be a burden.

Table 11.

Distribution of Oxen among Jats and Brahmans by Size of Cultivating Units, Rampur, 1953

Size of Cultivating Unit (Acres)	Number of Families with no Oxen	Number of Families with one Ox	Number of Families with a Pair of Oxen	Total Number of Families with Oxen
0	12	0	0	0
less than 10	10	2	15	17
10-12	0	0	11	11
13-18	0	6	16	22
19-22	0	3	4	7
25-38	0	0	3	3
Totals	22	11	49	60

Tenancy

There are two types of tenancy at Rampur: occupancy tenancy and tenancy at will. In both cases the land measurements are exact, regardless of how small the land parcel may be, and the rights to the land are jealously guarded. Occupancy tenancy is applied only to the Brahmans who were invited into the village many years ago. There are 15 Brahman families in Rampur. Four of these, as has already been noted, have oxen; eleven do not. Of the second group only one family has contact with the soil. This is a "non-marusi" family which engages in hoe-culture. The latter represents an even greater departure from the traditional pursuits of the Brahman caste than does the plow agriculture pursued by the other four families. Occupancy tenancy breaks down into three categories: (a) The first includes all the Brahmans who are occupancy tenants of Teka tholla. They pay only the revenue on the land they occupy to the owner of that piece of land. They do not pay any additional fee (malkana) to the owner. Only 14 acres of land come under this type of tenancy. (b) The second category includes all the Brahmans who are tenants of Jaimal tholla. They must pay the land owners a fee (malkana) of 2 annas per rupee of revenue due on the land, in addition to paying the revenue. This involves 11.2 acres. (c) The third category is known as "old possession" (kabza kadim or darinah). This type of occupancy does not even require the occupant to pay revenue to the Jat owner. However, if the owner wants to, he can take his case to court and have this type of occupancy changed to one of the forms (known as marusi) described in (a) and (b). Four Jat families hold 4 bighas, and two Brahman families hold 3.3 bighas in this fashion (.4 acre). The occupants of these 26 acres have practically all the rights over the land they occupy except the right to sell it. All the Brahman families in Rampur are occupancy tenants, even though they do not all cultivate land. Recently the consolidation committee asked the Brahmans to

become owners of their land, after coming to terms with the Jats. However, this solution involved the Brahmans receiving less land than they now hold in occupancy, so they refused.

Tenants at will are of two types: those who are tenant owners, or who have land of their own, and landless tenants. Most of the land rented out by the owners is rented to relatives, generally members of their own faction, who are tenant owners. Only 4.6 acres of land is cultivated by the eleven non-land-owning cultivating families. The only Brahman who rents land rents it from his own brother, from outside the village.

The rental arrangement has always been verbal, and the share which the renters pay is now 50% of all the produce. However, the non-Jat hoe cultivators make cash payments of 40 to 45 rupees per bigha.

There is only one Jat family now which pays a share of 33 1/3% to the owner, because that family supplies water from its own well. However, the number which paid one third was previously greater.

According to the patvari records, in 1947-1948,.6 acres of well-irrigated land, 15.4 acres of canal-irrigated lands, and 19 acres of unirrigated land were rented, all at the rate of one-half the grain.

There is little land for rent in Rampur, although the demand for land is great. There is great competition for the little bit which is for rent, and those who are able to rent out land gain prestige by doing so. Thirty-one Jat families are able to rent out land, and only 21 Jat families rent in land, as does one Brahman family and eleven lower-caste families. However, the total amount of rented land in Rampur is only 100 acres. Ten families of Jaimal tholla rent out 42.1 acres, 11 families of Dhan Singh tholla 32.2 acres, 2 families of Teka tholla 12.7 acres, and 8 families of Harditt tholla 13.3 acres.

There is some difficulty in determining the exact amount of land that is cultivated on a rental basis in Rampur. A comparison of the data on rentals as given in the village patvari records, with our data based on interviews of landowners and tenants, reveals a considerable discrepancy and suggests that the patvari records are unreliable on this particular score.[16] According to the patvari records for 1952 there were only seven landowners renting out a total of 28.3 acres of land. This was the figure recently given to the Community Projects Administration in their survey of the village. But according to our data there over thirty families renting out 100 acres of land. It appears that the patvari records give us only about one-third the total rentals. It is also interesting to note that the seven individuals listed as renting out land were all small owners, with holdings of about 5.2 acres. The fact that large landowners are not mentioned may reflect their power position vis-a-vis the patvari.

In recent years many rentals have not been listed as such because of the peasants' fear of land reforms whereby tenants may be given permanent or occupancy rights in the land. Landowners will therefore rent to relatives but will list the plot as being self-cultivated. Similarly, there is a tendency for landowners to shift tenants from one plot to another to guard against tenant occupancy claims. Finally, the patvari often lists brothers as being owner-cultivators even though they may have separate households with only one brother actually cultivating the land while the other brothers work at outside jobs.

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(16) For a detailed study of the patvari records, see Oscar Lewis, Preliminary Guide to the Use of Patwari Records, Evaluation Organization National Planning Commission, New Delhi, 1953.

Land Fragmentation

Land fragmentation, which is one of India's great problems, is in evidence at Rampur. A distinction should be made between decrease in the size of land holdings and fragmentation of cultivation units, although both processes have been occurring simultaneously. Table 12 shows the extent of decrease in size of landholdings over a 43-year period in Rampur. In 1910 there was not a single household with a holding of less than 6.25 acres. But by 1953 36 households, or 46% of all landowning households, had holdings of 6.25 acres or less. At the other end of the scale we find that whereas ten households, or nearly 40%, had holdings of over 18 acres in 1910, only six households, or about 8%, had such holdings in 1953.

Table 12.

Distribution of Landholdings by Size of Holding and by Number of Households, 1910 and 1953

Size of Holdings		Number of Households	
Bighas	Acres	1910	1953
1- 10		-	9
11- 20		-	17
21- 30	4.6- 6.25	-	10
31- 40		5	12
41- 50		5	4
51- 60	10.6-12.5	1	5
61- 70		-	9
71- 80		17	6
81- 90	16.9-18.75	-	-
91-100		6	1
101-150		3	4
151-250	31.5-52.2	-	1
251-500		1	-
Totals		38	78

With the limited land available, the continued break-up of land parcels by inheritance can only lead to smaller and smaller holdings. The number of individual owners has been rising steadily at Rampur since the settlement of 1909. In 1909 there were 1214 separate agricultural plots. In 1948 there were 1572 plots, an increase of 358. Table 13 shows the fragmentation of plots from 1908 to 1948. It will be seen that the highest incidence occurred during the depression years. This breakup is apparently due to several factors, such as: population pressure, urbanization, increased dependence on a market economy, and inheritance patterns. The traditional inheritance pattern in Rampur is for all the sons of a man to inherit equal shares in his land, regardless of their age at the time of his death. Formerly the pattern was for the brothers--unless they had had some violent quarrel--to maintain the land and work it in the form in which they had received it from their father. However, this traditional type of joint family holding seems to break up in times of economic hardship and at times when individuals wish to leave the village to seek work in factories, the army, or other fields.

A man who is leaving the village for work often wants to make an official separation of his own inherited share of the land from that of his brothers, so that while he is away, there will be no quarrels over the land. By going to the patvari, a man can have his share of the land registered as separate plots. Then his share can be rented to his brothers, if they want it, or to someone else. When the man is away, therefore, the land is rented out; thus he feels that he is protected against encroachment, and the bases for quarrels are lessened.

Table 13.

Frequency of Plot Fragmentation in Rampur, 1908-9 to 1947-8

Years	Total of New Plot Numbers
1908-9 to 1911-2	18
1912 to 1915	11
1916 to 1919	9
1920 to 1923	12
1924 to 1927	2
1928 to 1931	68
1932 to 1935	55
1936 to 1939	14
1940 to 1943	31
1944 to 1947-8	6

In other cases, an heir may apply to the patvari to divide his inherited land, because as time goes on the share may become too small to be worked profitably, and he may therefore prefer to rent out his inherited share.

The entire village lands are divided into 24 chaks, as the land units are called, according to their relative value. Eleven of the chaks belong to pana Dhan Singh and nine to pana Harditt, while members of each pana share in the remaining four chaks. Each chak is named, the name generally indicating its major characteristic or its location. The purpose of the chak divisions is to delimit good, bad, and indifferent land for apportioning. The private holdings of each family are divided as equally as possible among the various chaks, so that each owner has a small amount of each type of land. The result is that nearly every family has land holdings scattered in from 10 to 12 sections of land. The advantage of this system is that nearly every landholder has equal shares of all the types of land--canal-irrigated, well-irrigated, non-irrigated, sandy and loamy soils. The disadvantage of the system is the extreme fragmentation to which it leads. When a joint family splits up and the members start to cultivate individually, instead of as a joint family, they not only split up the family lands in each chak, but also split up many of the distinct plots in each chak, so as to get as even in qualitative division of land as possible.[17] As a result, 80% of the plots in Rampur have an area of less than one acre, the average falling between .2 and .6 acres. The present government plan for the consolidation of land will probably be unable to overcome this extreme fragmentation of land holdings, and its rather moderate aim is to bring the average size of plots to about one acre. This consolidation will constitute the new settlement for the village.

The small cultivating units can become economic only if a good number of families rent out their land, so that those families which have their own oxen and are in need of land to cultivate can get it. However, renting out of land is feasible only if those with small areas can get work outside of agriculture. Apparently this has been possible for some in recent times. Before 1940 the cultivating units were even more uneconomical, for most of the Jats were trying to earn a living from their land, as they could not find outside work. The possibility of renting in land was lessened. The other alternative to renting, that of mortgaging the land, increased, but the amount of mortgaged land was small. In 1929 it was only 30.2 acres, but in 1939-40 it had risen to 81.25 acres. Some of the families who were forced either to rent out part of their land or to mortgage part of it became even poorer, to the extent of having to give up their oxen.

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(17) This points out nicely the basic equality of rights within the joint family which is traditional in North Indian villages.

Land Transfer

The transfer of land other than through inheritance may be effected through (1) sale; (2) mortgaging out; (3) receiving back mortgaged land; and (4) gift. The total number of land transfers during the last 44 years in Rampur has numbered 570. With the exception of two cases of sale, all of these transfers were due to mortgaging. Again, exactness of measure is important, regardless of the smallness of the land parcel to be mortgaged. As has already been stated, sale almost never takes place, since all the males of a family have rights in the land, and since a man's sons inherit equally. If a man has no sons he is apt to adopt one, preferably a sister's son, to whom he can will his land. Gifts of land almost never take place, as land is much too precious.

Mortgaging, however, has become a way of making money from one's land without actually losing title to it by sale, or possible losing title to it through occupancy rights in the case of a long term rental. However, mortgaging takes place only under great stress. It is a blow to a Jat's social prestige if he has to mortgage his land, for it is a clear indication of poverty and inability to use the land for production. A man whose land is mortgaged out can hardly make good marriages for his sons and daughters.

There are many reasons for mortgaging land: (1) the death of one or more of the working members of the family, reducing the family to a small size. In such a case, a small family which cannot work all its land rents out part of it. Renting, however, decreases its profits, and through renting a small family may become poor, and eventually have to mortgage at least a part of its land; (2) The death of a few animals within a short period can lead to the poverty of a family and the enforced mortgaging of part of the land to get new animals; (3) Legal quarrels among the villagers are a frequent cause of impoverization and of mortgaging out land; (4) Sometimes the inability of a poor Jat family to marry off its sons forces a mortgaging out of lands in order to bring in girls.

Obviously, mortgaging is basically a method of receiving a large lump sum of money on one's capital goods. The money can be used for some important purpose such as a wedding or a legal case. Most Jats mortgage their land with the expectation of being able to get it back eventually. Formerly, however, they often mortgaged it to a Baniya, or money-lender. The Baniyas often foreclosed, and the Jats lost their land. But some years ago legislation was passed in Delhi State making it impossible for non-Jats to take land in mortgage, to buy land, or even animals. As a result, land is now sold or mortgaged only between Jats, in this state.

During and immediately after World War I and World War II the rate of mortgaging out of land decreased, and the rate of getting back mortgaged land increased, as the Jats had opportunities to earn money by outside employment. Their first move was to buy back their mortgaged land. However, during the depression years of 1927-1939 the trend was in the opposite direction. Much more land was mortgaged out than was taken back. During the war years almost no land was mortgaged out.

The thing that stands out in Table 14 is the increase in mortgaging out of land during the depression years of the thirties and the rapid recovery of land in the war years of the forties. Between 1929 and 1934 forty-four persons mortgaged out sixty-one acres of land, and seven persons recovered eleven acres of mortgaged land. But between 1941 and 1951 thirty-nine persons persons mortgaged out forty-seven acres, while eighty-two persons recovered 117 acres! Note also the tremendous increase in the value of land as reflected by the mortgaged figures. The average value of land mortgaged between 1910 and 1919 was about 450 rupees per acre, as compared to 1000 rupees per acre between 1941 and 1951.

Table 14.

Land Mortgages and Recovery of Mortgaged Land, Rampur, 1919-1951

Year	Mortgaged Out			Mortgage Recovery		
	Number of Cases	Area (Acres)	Mortgage Value (in Rupees)	Number of Cases	Area (Acres)	Mortgage Value (in Rupees)
1909-11	2	2	100	2	5	1,318
1911-13	3	5	1,455	2	3	849
1913-15	10	19	7,705	5	8	2,150
1915-17	10	17	2,476	6	12	4,194
1917-19	5	7	3,200	5	6	1,615
1919-21	3	6	2,200	13	21	6,895
1921-23	3	7	3,590	7	8	3,083
1923-25	6	16	12,273	5	17	6,250
1925-27	0	0	0	0	0	0
1927-29	4	4	1,447	1	1	215
1929-31	6	11	3,850	1	1	150
1931-33	13	22	10,032	1	3	600
1933-35	12	13	4,853	0	0	0
1935-37	9	12	3,975	4	5	1,725
1937-39	4	3	695	1	2	1,025
1939-41	2	2	180	2	2	475
1941-43	3	6	4,250	3	13	5,717
1943-45	22	31	24,209	52	78	33,531
1945-47	5	4	5,087	14	14	9,471
1947-49	6	3	8,350	11	10	12,224
1949-51	3	3	5,000	2	2	3,500

At the present time there are only six families in Rampur which have land mortgaged out. Three are from tholla Dhan Singh and three from Jaimal. They have only 10.7 acres between them. On the other hand, ten families from the same thollas have mortgaged in 25.3 acres. This includes land mortgaged in from another village. One of the villagers of Rampur has mortgaged out land to a man from the neighboring village of Rasulpur. The period of the mortgage is sometimes quite long. One family moved away from the village 65 years ago, mortgaging out land in the village. They held onto it, however, until recently, when they finally sold it, after having become firmly entrenched in another village.

One of the most outstanding aspects of land tenure in Rampur is the remarkable stability of land holding. Although there has been much juggling about of small plots of land, the overall picture has remained very steady.

Summary and Conclusions

The Jats, the dominant caste in Rampur, constitute a proprietary body which owns all the land in the village and is responsible for the revenue, assessed as a single tax. The eleven other castes in the village own no land and are living there, in a way, at the sufferance of the Jats.

The pana-tholla kinship divisions which supply village "headmen" apply only to the Jats, together with a few Brahmans. There are two principle types of land holdings in Rampur: common lands and private lands, which make up 5% and 95% of the village lands respectively. But the common lands are held in common by the Jats only and not by the other castes in the village. Moreover, rights in the common are based on the amounts of private land held by the Jats.

The term "private" also requires modification, for Indian peasant attitudes towards land lack the full expression of absolute ownership found in the West.

Common lands in north India are traditionally grazing areas and sources of wood. But the common lands in Rampur are very small and lack wood. There is no collective function in the common, although collective tenure persists. There has been some encroachment by different families on the common, leading to dissension and quarreling. Despite their small size, the common lands have many sub-divisions. Private land is also divisible into sub-classifications, but the basic division is in terms of family ownership. Traditionally, the villagers have held land as joint families, but in the recent times of stress, there has been a tendency for members of such families to break up their land into separate holdings. Land fragmentation is a serious problem in Rampur, especially since the population has doubled during the past fifty years, while the land resources have remained the same.

The effects of population pressure are not evenly distributed within the village. The twelve families of Teka tholla, for example, own almost as much land as the 28 families in tholla Dhan Singh. This would indicate that the land pressure among the Jats is greatest for the families in the latter tholla.[18] The tholla groupings are related to the faction structure in the village--an important determinant of behavior and politics in Rampur. A faction will not rent or mortgage out land outside of its own membership.

There is a great variation in socio-economic status within the Jat caste. Nearly 70% of the families own less than ten acres; while about 9% own more than 20 acres, or 27% of the total village lands. All the Jats own land, but 15% of the Jats are non-cultivators. Despite the great demand for land, there is little land for rent, and most land transfers are due to mortgaging. Gifts of land and land sales hardly ever take place. Only two land sales have been recorded in a period of fifty years. The general impression is one of remarkable stability of land-holdings.

Rampur is a village in which the traditional jajmani system of exchange of goods and services is weakening, while the money economy is gaining in strength. Some of the lower castes, particularly the Camars, have stopped performing some of their traditional services. Nevertheless, 38 of 69 non-cultivating families still depend, at least to some extent, upon the grain-payments made through the jajmani system, while 81 families are directly dependent upon the land.

Sixty-nine families have sources of outside income. But 80% of the total outside income is earned by two castes--the Jats and the Brahmans. These are the castes which have the highest prestige and wealth in the village and which take the most advantage of educational opportunities for their children. It is no doubt for these reasons that they are better equipped than the lower castes to get jobs outside the village.

Despite the differences in land-holding, wealth, and power within the village, however, the main problem in Rampur is not one of excessive concentration of land in the hands of a few. While there may be a tendency in that direction, the situation is not comparable with those in certain zamindari areas, where the exploitation is greater. There is no absentee land-ownership in Rampur, and there are no large land-holdings to the extent found elsewhere. The main problem in the village seems to be simply an inadequacy of land resources. The point is worth stressing, for the current emphasis in agrarian

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(18) Knowledge of this sort would be useful to village-level workers, for it would help them to spot the poor farm families.

reform measures in India is on the abolition of intermediary ownership rights in land and the attempt to settle land rights on the cultivators themselves.[19]

Rampur, however, presents the picture of a village in which such a state of affairs already exists. Yet the majority of the people are still poor and ill fed. A more egalitarian distribution of land among the cultivators would only further the already excessive land fragmentation. There are 721 acres of cultivable land at Rampur. Hence only 4.88 acres of land are available for the support of each of Rampur's 150 families, or two-thirds of an acre per person. This is not enough to provide a good standard of living for the people.

One solution to the problem would be more irrigation facilities. This is the most prominent "felt need" expressed by the villagers. They seem to feel that if the new community projects cannot increase canal-irrigation, they will not have much of value to offer the village. About one-third more land might be irrigated, which would greatly increase the agricultural yield.

Apart from this, the greatest need is for more outside income. If India's new Five Year Plan should succeed in fostering industrial output and in creating new jobs on a large scale, over-populated villages like Rampur might be relieved of land pressure. This, combined with the effects of the current land-consolidation program, should make larger cultivating units possible; then modern farm machinery and modern agrarian techniques might profitably be introduced. One difficulty at present is the slow development of industrialization and the scarcity of available jobs. The cities are already crowded with the unemployed. Moreover, most of the villagers are not trained for factory work.

In some discussions of India's economic development, it is assumed or stated that the present caste inequalities will automatically be reduced as the lower castes--especially the landless villagers--obtain jobs in the cities. These are the groups which would presumably be the first to seek urban employment, since they are the worst off under present conditions. "The growing class of landless rural laborers are the first to feel the pinch of agricultural distress, and improved means of communication enable them to leave the villages in search of work and higher wages.....Sometimes the agriculturist may seek employment in the towns to evade the village money-lender or to earn enough for buying cattle or more land. Sometimes again the village menials and drudges belonging to the depressed classes migrate to towns in the hope of bettering their prospects. Distress and not ambition being the chief spur, we may hazard the statement that those who migrate to the cities are more often than not the least competent and the most helpless of the village population."[20]

While our Rampur data do not deal with migration, but rather with people who work outside and continue to live in the village, a different picture emerges from this study. As we have seen, it is the higher-caste Jats and Brahmans at Rampur who have taken the greatest initiative in getting outside work, who have the best-paid jobs and the greatest number of them. A similar state of affairs has been described by Eames for a village in eastern Uttar Pradesh, where the Thakurs are the landowners, holding 82% of the village land.

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(19) See Frank J. Moore, "Land Reform and Social Justice in India", Far Eastern Survey, August 1955, pp. 124-128.

(20) G. B. Jathar and S. G. Beri, Indian Economics, London, 1949, Vol. 2, pp. 64-65. See also the authors' quotation from the report of the Royal Commission on Labour of 1931, Ibid., and the brilliant essay by D. R. Gadgil, "Economic Development in India", Economic Problems of Underdeveloped Countries in Asia, ed. by B. K. Madan, London, 1953, pp. 77-112.

More migrants are from the Thakur caste than from any other group, although they are second in terms of population. Members of this upper caste group go to a greater variety of places to find employment, get better positions than lower caste men, and earn and remit more money than do the lower castes.[21] If such conditions are prevalent in other Indian villages, it might mean that the inequalities of the caste system will be perpetuated, for the members of the higher castes would be the ones to benefit most in an industrialized India.

It is evident, in any case, that Rampur's problems cannot be considered in isolation. Whether the solution comes through industrialization or a reorganization of agriculture or both, it will have to depend upon long-term changes in the larger economy of India.

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(21) Edwin Eames, "Some Aspects in Urban Migration from a Village in North Central India", The Eastern Anthropologist, September-November 1954, p. 25.